

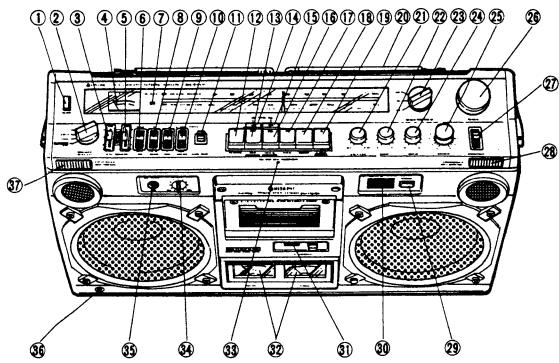


HITACHI

TRK-8180E, E(BS)

SERVICE MANUAL

893
No. 1221



KEY TO ILLUSTRATIONS

①	LIGHT BUTTON	⑯	STOP/EJECT BUTTON
②	FUNCTION SELECTOR	⑯	TELESCOPIC ANTENNA
③	RECORD LEVEL CONTROL (LEFT)	⑯	(AERIAL)
④	TUNING/BATTERY METER	⑯	BALANCE CONTROL
⑤	RECORD LEVEL CONTROL (RIGHT)	⑯	BASS CONTROL
⑥	REC MANUAL SWITCH	⑯	BAND SELECTOR
⑦	FM STEREO INDICATOR	⑯	TREBLE CONTROL
⑧	TAPE SELECTOR SWITCH	⑯	VOLUME CONTROL
⑨	RIF SWITCH	⑯	TUNING CONTROL
⑩	MODE SWITCH	⑯	LOUDNESS SWITCH
⑪	RECORDING MUTE SWITCH	⑯	BUILT-IN MICROPHONE
⑫	PAUSE BUTTON	⑯	(RIGHT)
⑬	FAST FORWARD/CUE BUTTON	⑯	PROGRAM SWITCH
⑭	PROGRAM SELECTOR BUTTON (◀)	⑯	PROGRAM INDICATOR
⑮	PROGRAM SELECTOR BUTTON (▶)	⑯	TAPE COUNTER
⑯	REWIND/REVIEW BUTTON	⑯	LEVEL METER (RIGHT AND LEFT)
⑰	PLAYBACK BUTTON	⑯	OPERATION INDICATOR
⑱	RECORD BUTTON	⑯	MIXING VOLUME CONTROL
⑲		⑯	MIXING SOCKET
⑳		⑯	HEADPHONE SOCKET
㉑		⑯	BUILT-IN MICROPHONE
㉒		㉓	(LEFT)

SPECIFICATIONS

GENERAL SECTION

Semi-conductors: IC's: 16
Transistors: 23
Diodes: 27
LED: 2
Power(Mains) Supply: AC: 220V, 50 Hz [For E]
240V, 50 Hz [For E(BS)]
DC: 12V (IEC R20 x 8)
Car: Use car battery adaptor

Power (Mains)
Consumption: 21W
Dimensions: 532(W)x316(H)x161(D)mm
Weight: 7.5 kg (with batteries)
Power output: 5W/CH (max.)
Speaker: 16 cm, 3.2 ohms x 2
5 cm, 8 ohms x 2

TUNER SECTION

Circuit System: FM/SW/MW/LW 4-band
superheterodyne
Tuning Range: FM: 88 to 108 MHz
SW: 6.0 to 18 MHz
MW: 530 to 1605 kHz
LW: 150 to 350 kHz
Sensitivity: FM: 10 dB (pra.) 2 dB (max.)
SW: 25 dB (pra.) 20 dB (max.)
MW: 42 dB (pra.) 30 dB (max.)
LW: 52 dB (pra.) 40 dB (max.)

Intermediate
Frequency:
Antennas(Aerials):

FM: 10.7 MHz
SW/MW/LW: 465 kHz
FM/SW: Telescopic antenna or
External antenna
MW/LW: Ferrite-core antenna

TAPE RECORDER

Tape: Cassette tape (C-30, 60, 90)
Tape Speed: 4.75 cm/s
Recording System: AC bias
Erasing System: AC erasing
Track System: 4 track 2 channel
Frequency Response: Normal: 50 ~ 10,000 Hz
CrO₂: 50 ~ 12,000 Hz
S/N(Signal to Noise
Ratio): 50 dB
Cross Talk: 72 dB
Erase Ratio: 65 dB
Input Sensitivity and
Impedance: Microphone: -55 dB, 500 ohms
Phone: 50K ohms
Record/Playback(DIN): 60 mV,
50K ohms
Output Level and
Impedance: Record/Playback (DIN): 700 mV,
10K ohms
Ext speaker: 3.2 ohms
Fast Forward or
Rewinding Time: 120 sec (Using C-60)
Distortion: 3%
Motor: DC micromotor

CASSETTE TAPE RECORDER WITH FM/SW/MW/LW RADIO

JUNE 1979

893

SAFETY PRECAUTION

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safetyrelated characteristics, always use genuine Hitachi's replacement parts. Especially critical parts in the power circuit block should not be replaced with other makers. Critical parts are marked with Δ in the schematic diagram and circuit board diagram.
2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safe to operate without danger of electrical shock.

DRPS (Digital Random Program Selector)

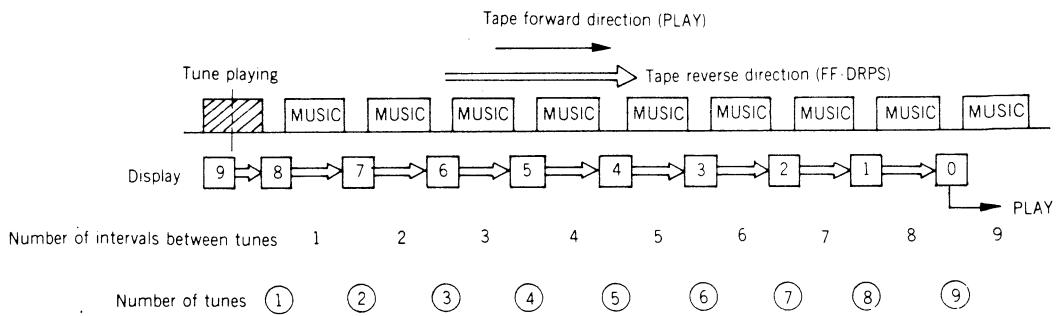
DRPS detects the non-recorded sections between music recorded on the tape and automatically selects and plays back desired tunes up to 9 tunes before or after the tune being played back at present.

The tune-selection system is different depending on the direction, whether you are selecting tunes in the FF direction or the REW direction.

To select the n-th tune in the FF direction, assuming the tune being played back at present to be "0", set the indication of the program indicator to "n".

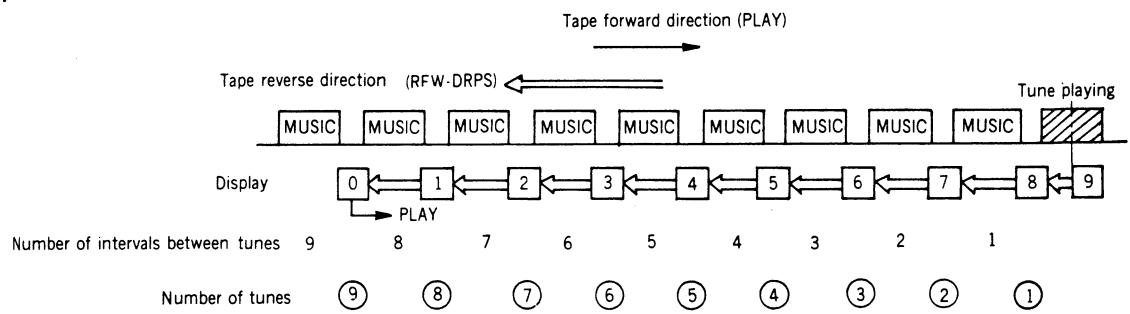
To select the n-th tune in the REW direction, set the indication of the program indicator to "n + 1".

Fig. 1 and 2 show the selection of tune and the program indicator display during the DRPS operation in the FF and REW directions.

DRPS Operation in FF direction

The above is an example of the operation with the indication set to "9" in FF-DRPS.

Fig. 1

DRPS Operation in REW direction

The above is an example of the operation with the indication set to "9" in REW-DRPS.

Fig. 2

Outline of mechanism

The DRPS mechanism has been added to the conventional MZ type mechanism provided with Full-Auto/Review/Cue. When the DRPS mechanism is operated, the Cueing or Review mode for the inter-tune gap detection is held until the program indicator displays "0".

When the FF or REW button and the DRPS button are pressed simultaneously during PLAY, the solenoid operates to draw back the lock-plate which locks the DRPS operation slider, to lock it. The FF or REW operation button is locked together with the DRPS operation slider corresponding to the operation button. When the program setting is operated by mistake and the indication of the program indicator does not indicate "0" at the tape end during DRPS operation, the mechanism enters the STOP mode. (The Auto-stop mechanism does not operate during ordinary Review or Cueing operation.)

The AS cam gear and AS gear of the Auto-stop mechanism are engaged by means of the movement of the lock plate which locks the operation slider and the auto-stop mechanism to the operation mode.

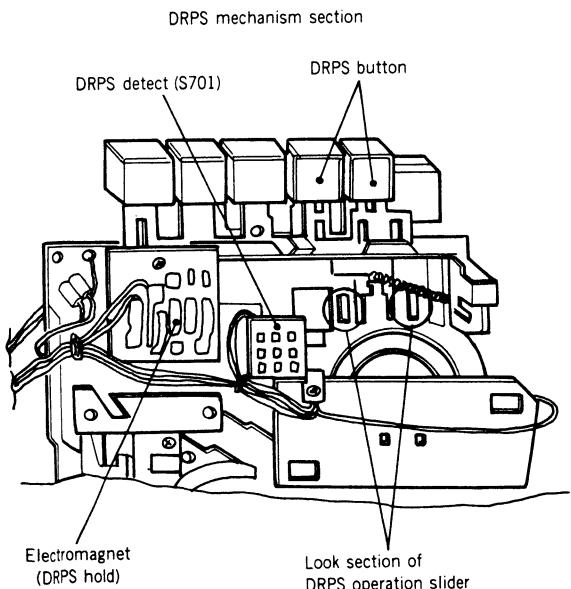


Fig. 3

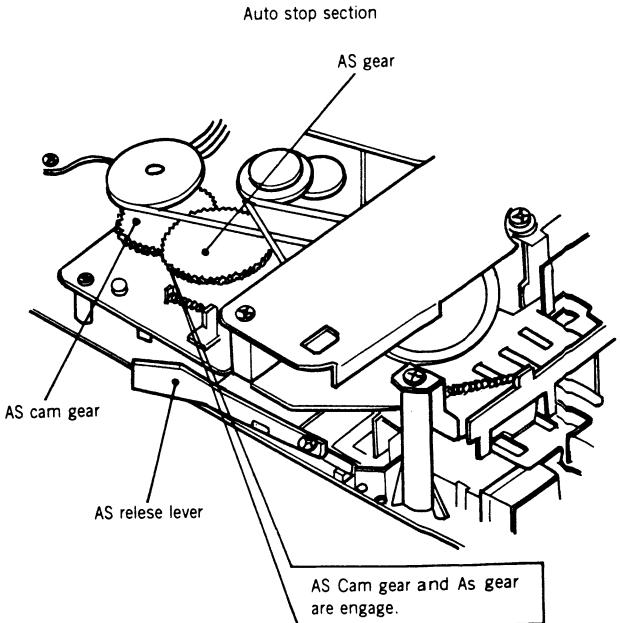


Fig. 4

Outline of the DRPS circuit

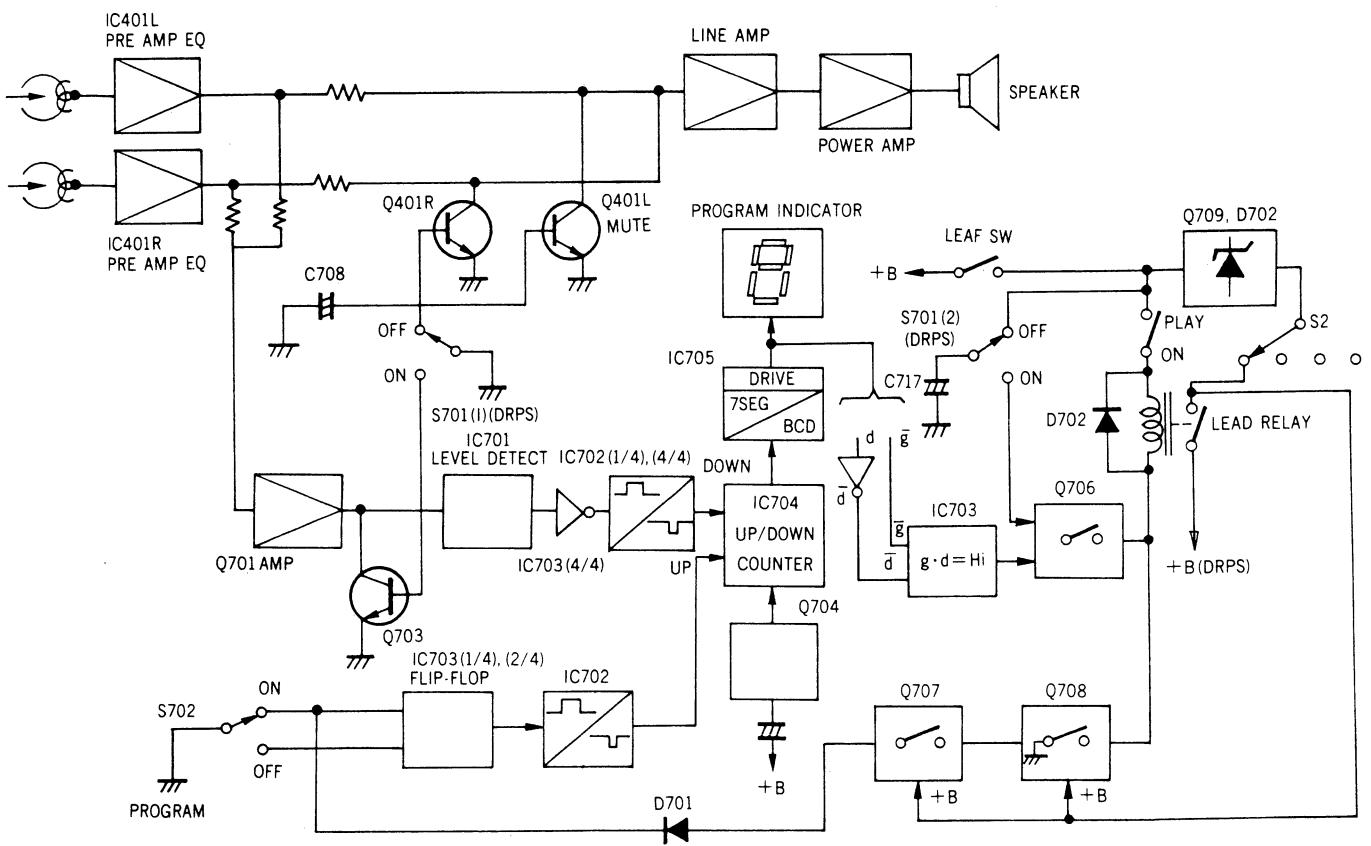


Fig. 5

Outline of the circuit

Fig. 5 is a block diagram of the DRPS circuit.

The circuit is designed so that the review or cueing mode is counted down from the count value of the selected program every time an inter-tune gap is detected and the indication is held until just after the indication becomes "0".

1. Play signal detector circuit

This circuit mixes the channel outputs of both IC401L/R, supplies it to Q701 to amplify it. From these, it is supplied to IC701, which has an output of Lo (0V) with an input level of less than -35 dB, and an output of Hi (5V) with an input level of more than -35 dB.

To prevent operation from stopping for short nonrecorded sections during the music, the variation of the output is delayed when the input reduces abruptly. This delay time is determined by the time constant of C707 and R709 connected to terminal (2) of IC701.

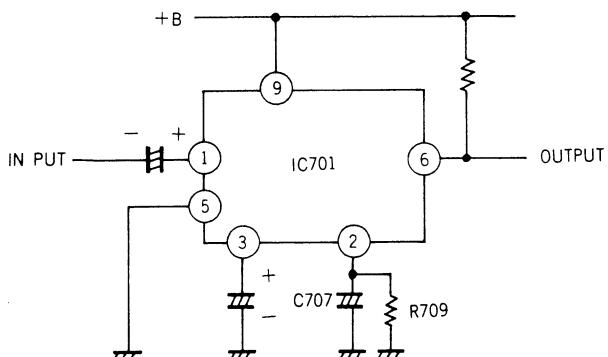


Fig. 6

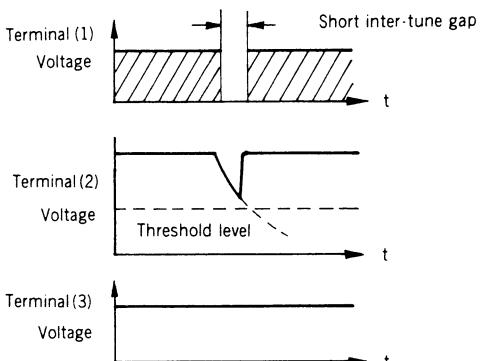
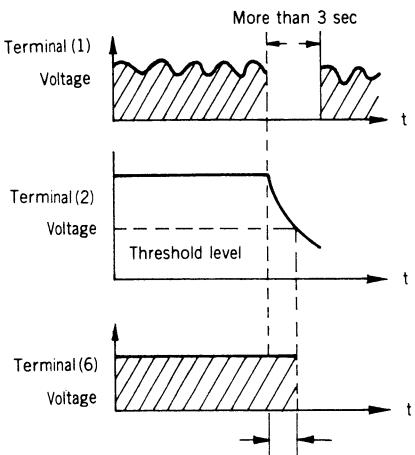
Output of IC701 when the inter-tune gap is too short**Output when the inter-tune gap is short.**

Fig. 8

Output of IC701 when the inter-tune gap is more than 3 sec

Delay time : Determined by the time constant of C707, R709.

Fig. 7

- * Shows the time with a tape speed of 4.75cm/sec. Since it starts cue/review operation during DRPS, and the tape speed at the winding start and the winding end differ, the inter-tune time becomes 0.11 sec min, 0.3 sec. max.

This signal is inverted by IC703, and in addition to it, when the output level is reduced to Lo from the Hi potential the negative polarity pulse is generated by the pulse generator circuit (integral/shaping circuit) composed of (1/4), (4/4) of IC702. This negative polarity pulse is supplied to the count-down instruction terminal of the counter (IC704).

The counter counts down every time the negative pulse is input. In this case, terminal (5) (count-up instruction terminal) of IC704 is set to Hi potential.

2. Muting circuit

The DRPS operation detects the inter-tune gap in the PLAY signal in the Cue or Review mode.

In the meantime, the play signal output from the speaker is muted and the play signal is supplied only to the DRPS circuit.

- The play signal to the DRPS circuit is muted for approx 0.4 sec from the time when DRPS operates, to prevent mis-operation of the initial DRPS operation. That is, when the DRPS button is pressed, S701-(1) is changed over to the ON side, so the charge held by C704 is discharged via R710 and the Play signal is muted until it becomes to less than the threshold level of Q703.

The muting for 0.4 sec during Cue or Review corresponds to approx. 4~10 sec when converted to the play mode, so when the inter-tune gap is less than this time, the tune selection function does not operate.

Q401 R/L shown in Fig. 5 is for speaker output muting, and Q703 for the DRPS circuit input signal muting.

3. Program setting & Selection number storage circuit

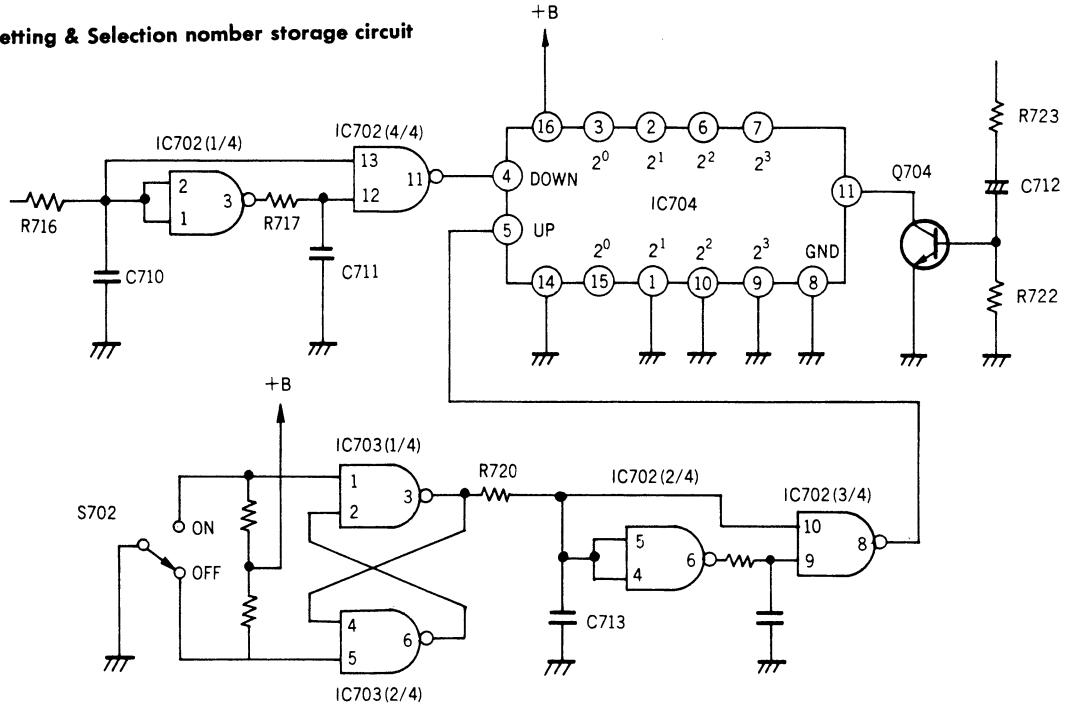


Fig. 9

The flip-flop composed of (1/4), (2/4) of IC703 prevents the mis-setting of the program caused by chattering when the program switch (S702) is pressed. In addition, a negative pulse is generated when the input is changed to Lo from Hi by the pulse generator circuit composed of (2/4) and (3/4) of IC702, and this pulse is supplied to the count-up instruction terminal of the counter (IC704).

Count-up is done every time ON changes to OFF when the ON/OFF of S702 is repeated. In this case, terminal (4) (count-down instruction terminal) is set to Hi.

Q704 keeps terminal (11) of IC704 at Lo for the time until the potential of R722 caused by current flowing to C712 drops to the threshold level, when power is applied to the DRPS circuit.

When terminal (11) of IC704 is changed to Lo from Hi, each memory inside 4-bit counter is set depending on the level applied to terminals (9), (10), (1), (15).

In this unit, terminal (15) of IC704 is set to Hi and terminals (9), (10), (1) to Lo so that the initial display of the program indicator is "1" when the DRPS is operated. ((9) : 2³, (10) : 2², (1) : 2¹, (15) : 2⁰). The output of IC704 is the digital amount corresponding to the binary 4-digit number.

Terminals (7), (6), (2), (3) show the counter output, terminal (7) MSB, terminal (3) LSB.

These output codes of decimal values are shown in Table 1.

Table 1

Decimal value	Terminal ⑦ (MSB)	Terminal ⑥	Terminal ②	Terminal ③ (LSB)
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1

0 : OV 7 : 5V

Decimal value : Same value as the display of program indicator.

4. Program indicator circuit

IC705 converts the binary 4-digit (BS code) output from IC704, to the 7-segment decimal indication output of the program indicator and drives the LEDs.

The segment outputs of IC705 are set to Lo (Open collector) to drive the respective segments.

Terminal (3) of IC705 shows the lamp test input.

That is, when this terminal is set to Lo, the indication shows "8" because the 7-segment output becomes Lo.

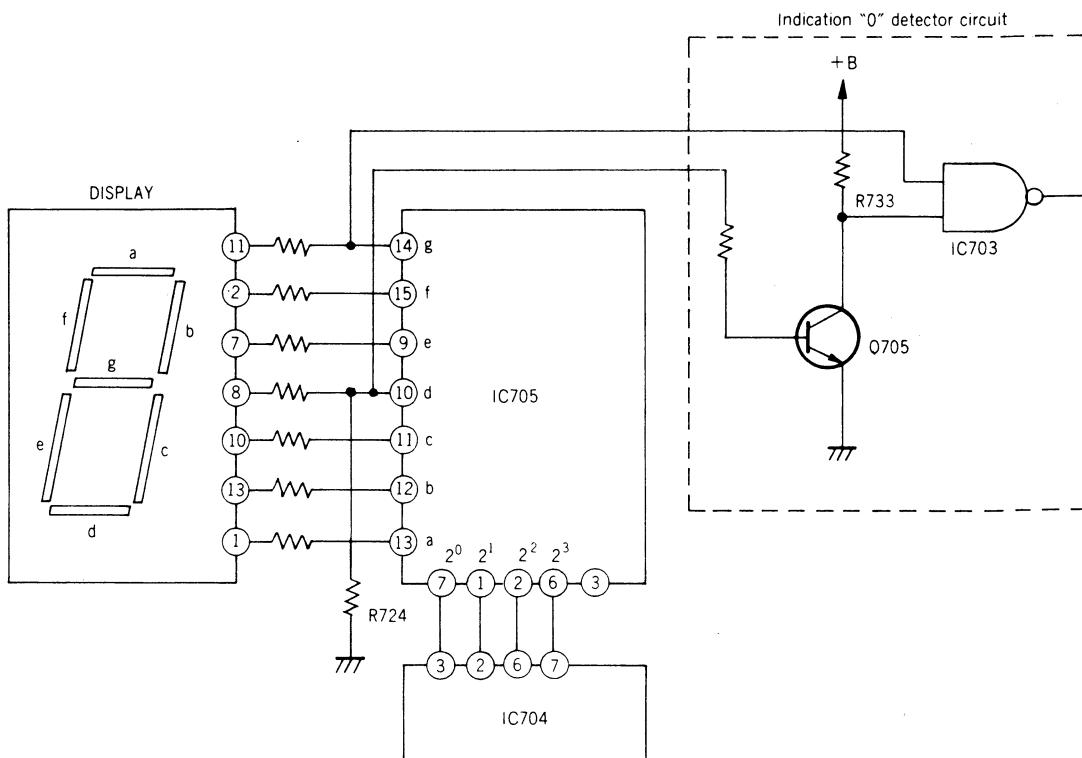


Fig. 10

5. Indication "0" detector circuit

Table 2 shows the codes of the 7-segment program indicator display. Since only segment (g) is not lit, detection of the condition of this segment (g) will do, to detect the indication "0" from this code. However, when 1 and 7 are displayed, segment (g) does not light, so the potential of 2 segments, which also do not light when 1 or 7 is displayed but light with "0" displayed, ((e) or -(d)), are detected via a NAND circuit. Furthermore, segment (d) is supplied to the NAND circuit via the inverter composed of Q705, to obtain the Lo potential when only the indication is "0".

Indication	Segment Output						
	a	b	c	d	e	f	g
0	0	0	0	0	0	0	1
1	1	0	0	1	1	1	1
2	0	0	1	0	0	1	0
3	0	0	0	0	1	1	0
4	1	0	0	1	1	0	0
5	0	1	0	0	1	0	0
6	0	1	0	0	0	0	0
7	0	0	0	1	1	0	0
8	0	0	0	0	0	0	0

Table • 2

6. Solenoid drive circuit

The solenoid turns on the reed relay, which controls the power supply to the circuit, by use of its magnetic field when the DRPS function is operated. At the same time, the solenoid locks the DRPS slider until the program indicator displays "0" when the mechanism is set to Cue or Review. Power is supplied to the DRPS circuit by pressing the DRPS button or the program switch with the Play button pressed and the selector knob at TAPE.

1) Operation when the program switch is pressed When program button (S702) is pressed, Q707 turns OFF, Q708 ON, so the solenoid operates and power is applied to the DRPS circuit. Since "1" is set to the counter (IC704) when power is applied, the program indicator indicates "1" and the output terminal (11) (IC703) of the indication "0" detector circuit is set to Hi.

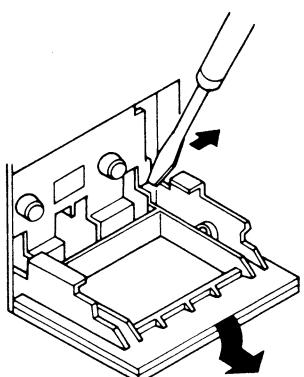
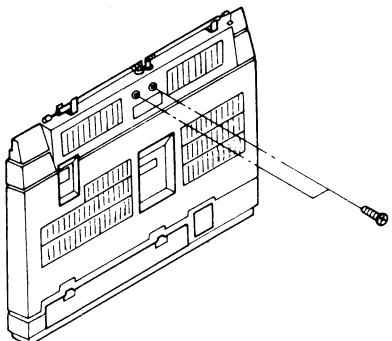
With this Hi potential Q706 stays ON until the indication of the program indicator becomes "0", so the solenoid operates and power to the DRPS circuit is maintained.

2) When the DRPS button at the FF or REW side is pressed in the PLAY mode.

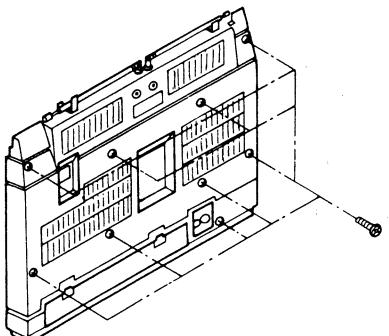
When this unit is in the PLAY mode and the DRPS function is operaed, the 12V potential is charged to C717 because S701 shown in Fig. 5 is OFF.

With the DRPS button pressed, S701 is changed over to ON, displays, so Q706 and the solenoid operate until the program indicator displays "0" by means of the potential of C717, to supply power to the DRPS circuit and lock the DRPS operation slider simultaneously.

DISASSEMBLY

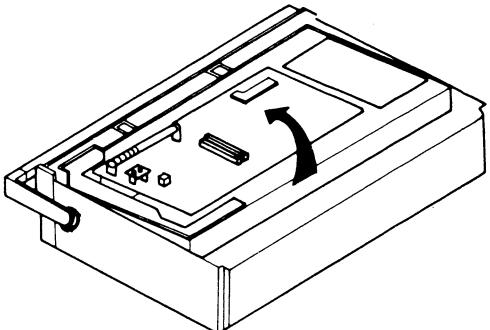
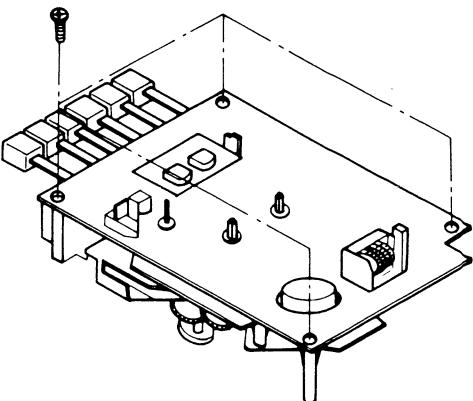
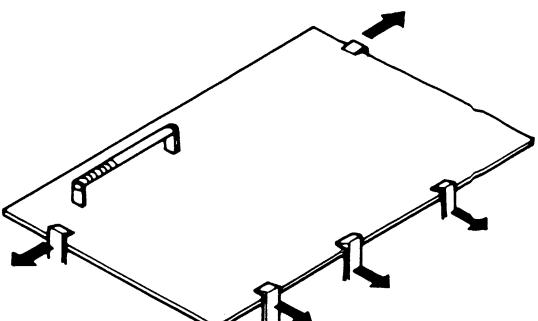
1. Cassette lid

2. Telescopic Antenna


Note : The lead wire connected to the rod antenna is tightened together with the rod antenna fixing screw. It is designed so that the wire cannot be removed when the rod antenna is pulled out.

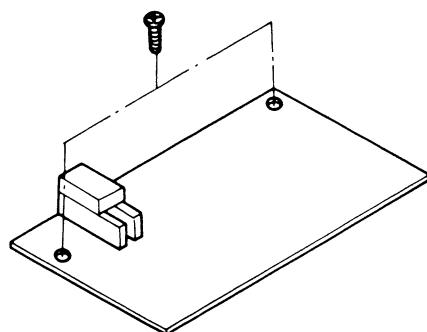
3. Rear Case

4. Main Chassis

Remove the selector switch knob, level control knob and tuning knob.

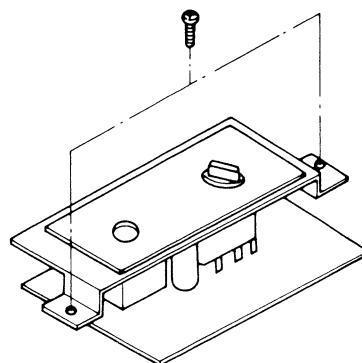
Press the eject button to release the engagement of the mechanism and cassette lid. Then lift up the battery side of the main chassis.


5. Cassette Chassis

6. Main P.C board


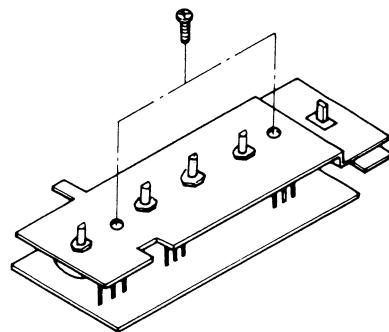
7. DRPS P.C. board



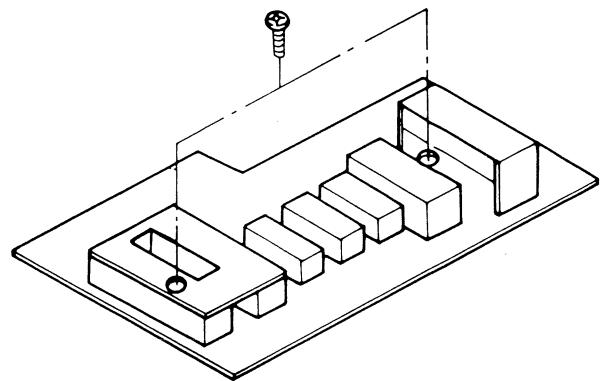
8. Mix P.C. board



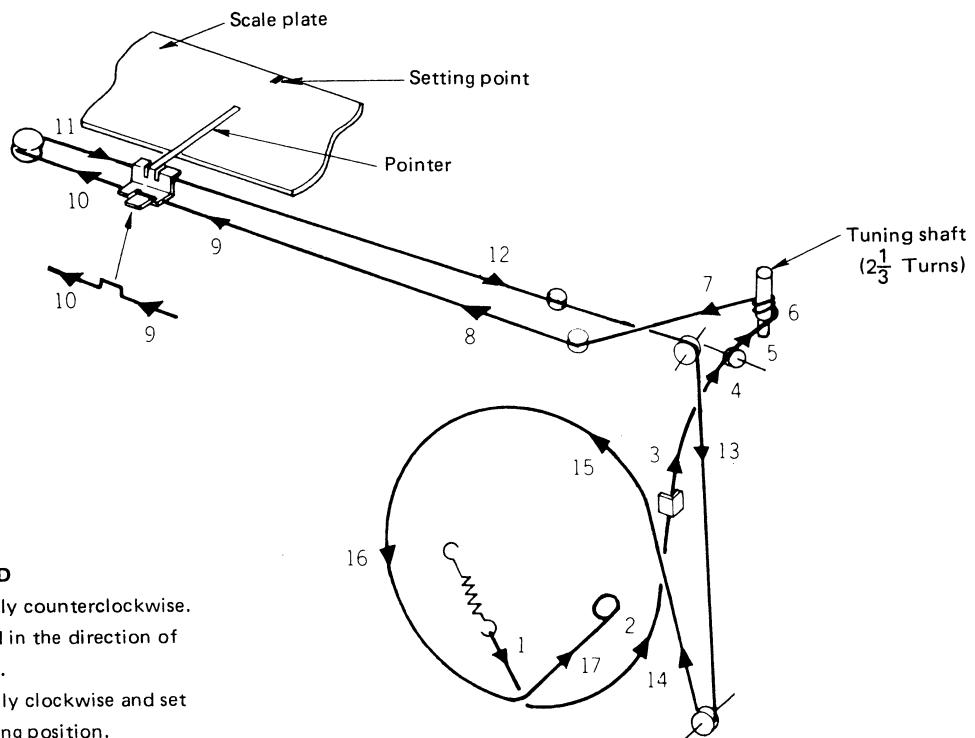
9. Volume P.C. board



10. Switch P.C. board



DIAL CORD STRINGING



STRINGING METHOD

1. Turn the pulley fully counterclockwise.
2. String the dial cord in the direction of arrow (No. 1 ~ 17).
3. Turn the pulley fully clockwise and set the pointer to setting position.

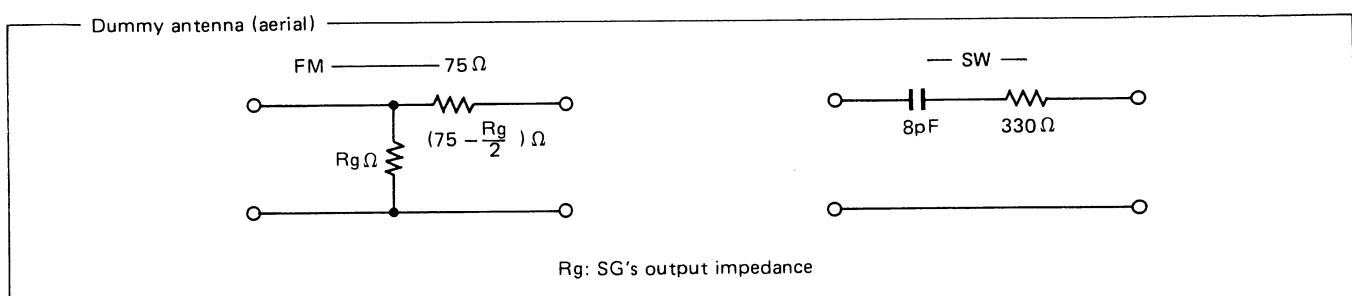
LUBRICATION

Lubricate one or two drops of machine oil to rotating point or lubricate grease to sliding point. Lubricate the respective parts listed below once every 1000 hours or once a year under normal conditions of use. Avoid oiling them excessively, or rotation may become irregular because of oil splashes.

Lubrication	Oil or grease
Motor shaft bearing	
Capstan shaft bearing	Oil
Pressure roller bearing	

ADJUSTMENT

TUNER SECTION

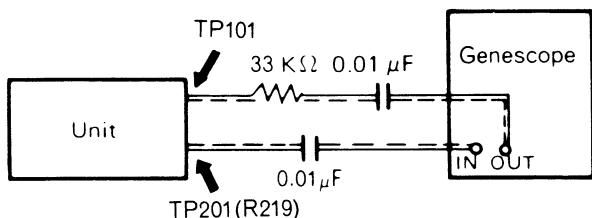


1. FM IF adjustment

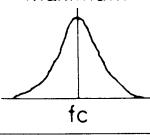
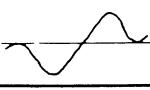
Setting :

- Function selector : Radio
- Mode switch : Mono
- Band selector : FM

Connection :

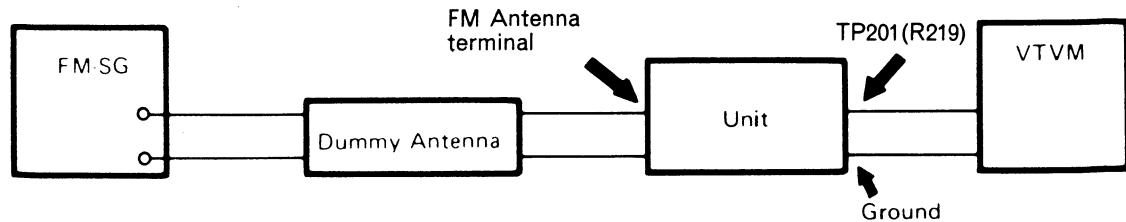


Adjustment :

Genescope	Dial pointer position	Adjust	Reading	Remarks
10.7 MHz	Highest	T202	—	Turn T202 fully counterclockwise.
		T101 T201	Maximum 	1) fc : Specified center frequency of the ceramic filter. 2) Reduce the level of the genescope to make one waveform.
		T202		Adjust T202 for a symmetrical sinewave (\$ curve) output.

2. FM RF (Covering & Tracking) adjustment**Setting :**

- Function selector : Radio
- Mode switch : Mono
- Band selector : FM

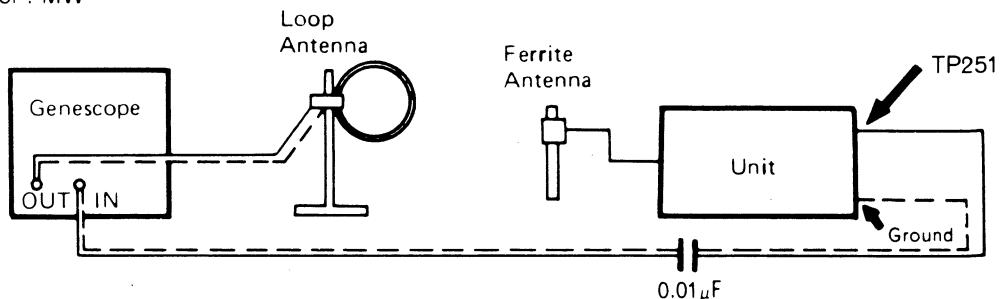
Connection :**Adjustment :**

Item		Signal generator		Dial pointer position	Adjust	Reading	Remarks
		Frequency	Modulation				
1	Covering	87.25 MHz ※ 87.5 MHz	400 Hz 30%	Lowest	L103	Max.	—
		109 MHz		Highest	CT102		
3 Repeat 1 and 2.							
4	Tracking	90 MHz	400 Hz 30%	90 MHz	L101	Max.	—
		106 MHz		106 MHz	CT101		
6 Repeat 4 and 5.							

※ For West Germany

3. AM IF adjustment**Setting :**

- Function selector : Radio
- Band selector : MW

Connection :**Adjustment :**

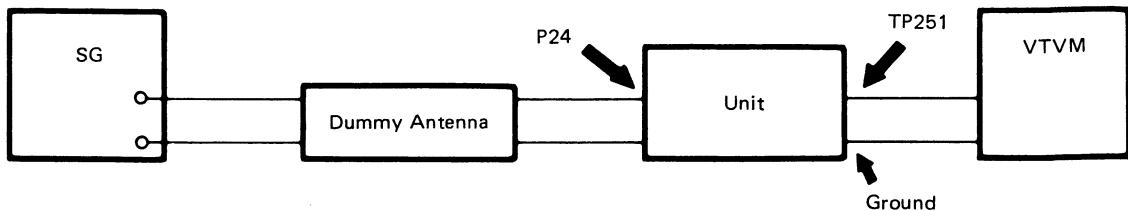
Genescope		Dial pointer position	Adjust	Reading	Remarks
Frequency	Modulation				
465 kHz	—	Highest	T151, T152 T204	Max.	—

4. SW RF (Covering & Tracking) adjustment

Setting:

- Function selector: Radio
- Band selector: FM

Connection :



Adjustment :

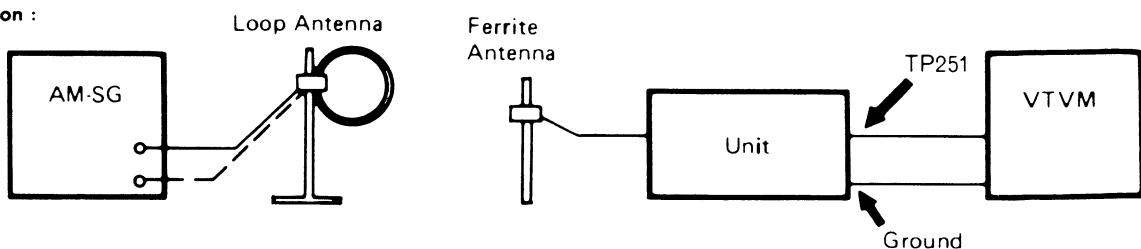
Item	Signal generator		Dial pointer position	Adjust	Reading	Remarks
	Frequency	Modulation				
1	Covering	5.8 MHz	400 Hz 30%	Lowest	L154	Max.
2		18.5 MHz		Highest	CT154	
3	Repeat 1 and 2.					
4	Tracking	6.5 MHz	400 Hz 30%	6.5 MHz	L151	Max.
5		16 MHz		16 MHz	CT151	
6	Repeat 4 and 5.					

5. MW/LW RF (Covering & Tracking) adjustment

Setting:

- Function selector: Radio
- Band selector: MW or LW

Connection :



Adjustment :

1) MW

Item	Signal generator		Dial pointer position	Adjust	Reading	Remarks
	Frequency	Modulation				
1	Covering	515 kHz	400 Hz 30%	Lowest	L155	Max.
2		1650 kHz		Highest	CT155	
3	Repeat 1 and 2.					
4	Tracking	600 kHz	400 Hz 30%	600 kHz	L152	Max.
5		1400 kHz		1400 kHz	CT152	
6	Repeat 4 and 5.					

2) LW

Item	Signal generator		Dial pointer position	Adjust	Reading	Remarks
	Frequency	Modulation				
1 Covering	145 kHz	400 Hz 30%	Lowest	L156	Max.	—
2	360 kHz		Highest	CT156		
3	Repeat 1 and 2.					
4 Tracking	160 kHz	400 Hz 30%	160 kHz	L153	Max.	—
5	330 kHz		330 kHz	CT153		
6	Repeat 4 and 5.					

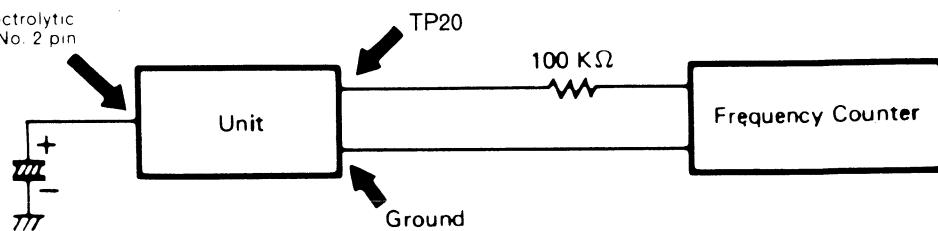
5. FM MPX (Multiplex) adjustment

Setting :

- Function selector : Radio
- Band selector : FM
- Mode switch : stereo

Connection :

Connect a $10\mu\text{F}$ 25V electrolytic capacitor between the No. 2 pin of IC301 and ground.



Adjustment :

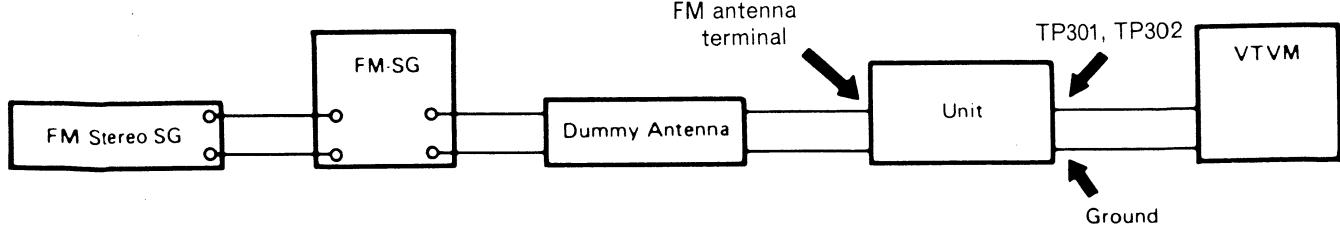
Adjust	Reading	Remarks
RT302	$19\text{ kHz} \pm 100\text{ Hz}$	—

6. FM separation adjustment

Setting :

- Function selector : Radio
- Band selector : FM
- Mode switch : Stereo

Connection :

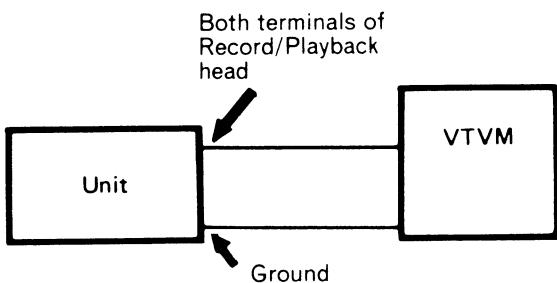


Adjustment :

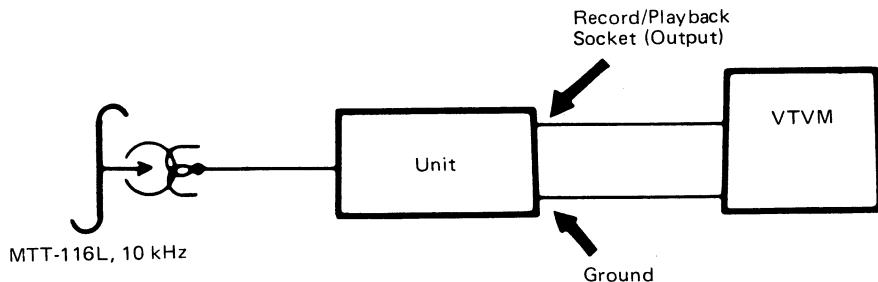
Signal generator		Dial pointer position	Adjust	Reading	Remarks
Frequency	Modulation				
98 MHz 60 dB	L + R(1 kHz) : 40 kHz dev. Pilot(19 kHz) : 6 kHz dev.	98 MHz	RT301	Min.	1) After feeding in of R channel and pilot signals, adjust RT301 for a minimum L channel output. 2) Optimize RT301 so that the leak level of the L channel signal is equal to that of the R channel signal.

TAPE DECK SECTION**1. Bias current adjustment****Setting :** Recording mode

- Tape selector : NORMAL
- RIF switch : A position

Connection :

Adjustment : Set the record mode. Adjust RT401R (RT-401L) so that the bias voltage of 7.5V is applied to the both terminals of Record/Playback head.

2. Head azimuth adjustment**Setting :** Playback mode**Connection :**

Adjustment : Playback a test tape (MTT-116L, 10 kHz) and adjust the azimuth adjustment screw for maximum output.

3. Installation position of solenoid

Adjust the solenoid installation position so that gaps between the solenoid and lockarm, $a = 0$ (close contact), $b = 0 - 0.5$ mm when the solenoid fixing screw shown in Fig. 11 is loosened and power is supplied to operate the solenoid. After adjusting it, leave the solenoid operating, move the solenoid holder in the direction of the arrow, slide the lock plate which locks the DRPS operation slider fully, check that gaps $a = 0$, $b = 0 - 0.5$ mm and fix the solenoid holder. Check that there is no reduction in lock plate movement and the stroke at this time.

4. Installation position of DRPS switch

Install the DRPS switch so that when the unit stops, the switch plate and the DRPS switch the gap between becomes approx. $0.1 - 0.5$ mm as shown in Fig. 12.

5. Installation position of the AS releasing plate

Install the AS releasing plate so that gaps a & b of the engaging section of the AS operation plate and AS releasing plate shown in Fig. 13 are equal. Check that the AS cam gear and AS gear shown in Fig. 14 engage more than 1/2, when the solenoid is operated after installation.

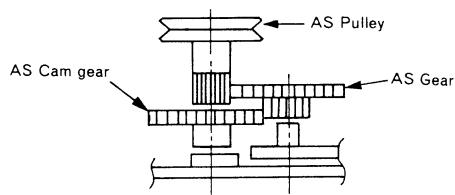


Fig. 14

6. Projection of REC/PLAY head during DRPS operation

Mount the jig, press the DRPS button on the FF or REW button side in the PLAY mode and check the projection of the REC head by the same procedure as in the conventional REC/PLAY head projection check during PLAY. Use the jig piece exclusively for D.R.P.S and the dimension of the marking-off line of the jig base, within the permissible range (within 0.4 mm) for 3 heads.

Reference: REC/PLAY head projection within the permissible 3-head range using the exclusively jig piece is $1.7 - 2.1$ mm.

Adjust projection by the following procedure when it is not in the above range. First perform adjustment specified in (1). When projection cannot be adjusted in this range, perform adjustments specified in (2) and (3).

- (1) Adjustment to max. 0.2 mm is possible by adjusting the forward and backward position of the head.

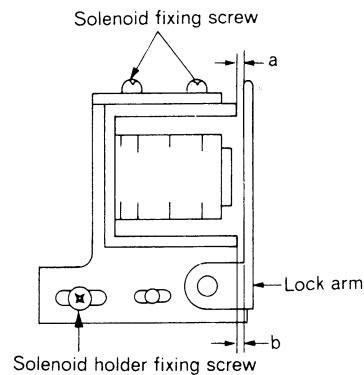


Fig. 11

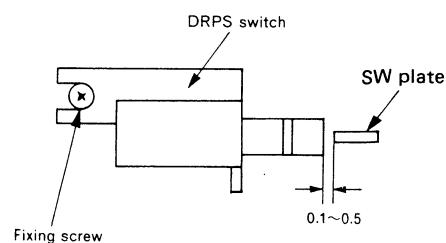


Fig. 12

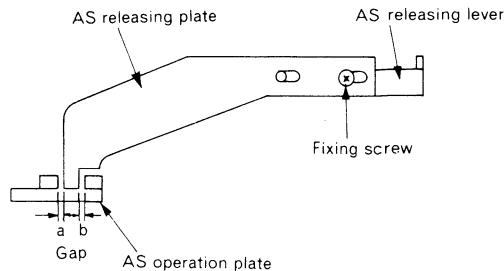
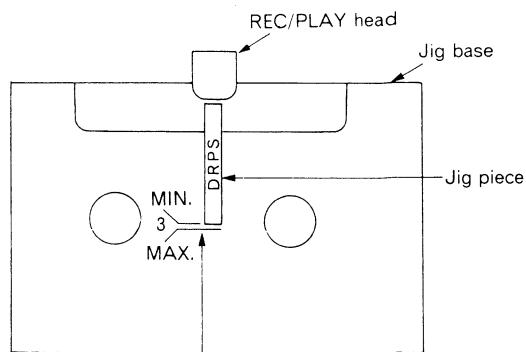


Fig. 13



Should be in the permissible range of 3-head.

Fig. 15

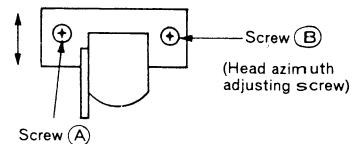


Fig. 16

INSPECTION

(2) Adjustment to max. 0.2 mm is possible by changing the installation position of the DRPS mechanism assembly.

(3) The REC/PLAY projection becomes larger during DRPS operation by moving the DRPS mechanism ass'y in the direction A.

Be sure to perform the checking and adjustment mentioned above during replacement of parts or repairs. Especially, when checking the mechanism, the DRPS mechanism is often removed. The projection of the REC/PLAY head changes when the DRPS is removed, so check the projection of the REC/PLAY head after reassembly.

7. Adjustment of the input level during DRPS operation

Load the test tape TMT-6261 (for level adjustment), press the DRPS button on FF side in the PLAY mode to operate the DRPS function. Connect the voltmeter between the test point terminal P19 (terminal 6 of IC701) and ground. Adjust so that when the 500 Hz, -40 dB section of the test tape TMT-6261 is fast-forwarded in the DRPS mode and RT701 is turned from max. counterclockwise (output voltage at that time is Hi (6.5V) clockwise, the output voltage is just after it changes to Lo (0V).

Ideally, adjust RT701 to the position just after the Hi potential change to Lo potential. When RT701 is turned further clockwise, the input level decreases and the unit is likely to top at other than inter-tune section.

8. Checking STOP mode

Mount the test tape TMT-6262 (for checking STOP/NON-STOP), press the PLAY button and DRPS button on the FF side simultaneously while the tape is wound fully in the REW direction. Check that the tape does not stop at the 0.8 sec. non-signal section (a line is drawn at the 0.8 sec. non-signal section. 1 kHz signal is recorded in the section before the 0.8 sec non-signal section and a 500 Hz signal is recorded 0.8 sec after the non-signal section, so check that the tape does not stop at the point where the frequency changes) and stops at the next 3 sec. non-signal section. The 0.8 sec. and 3 sec non-signal sections are present at 9 positions with equal intervals, so checking is possible 9 times continuously. Also, set the DRPS program to "9" to check that the tape stops at the indication "0".

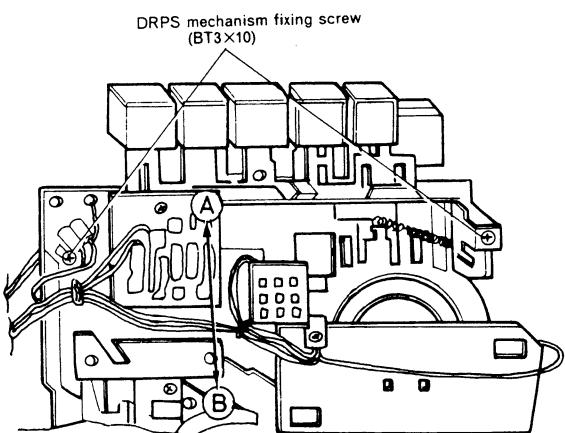


Fig. 17

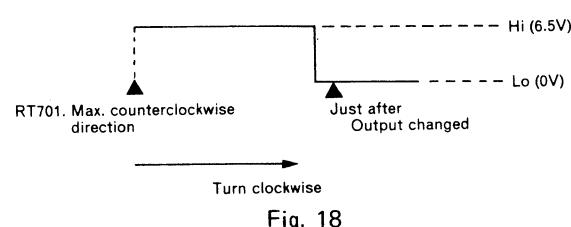


Fig. 18

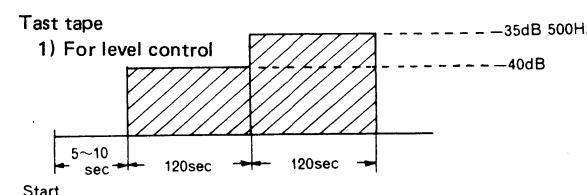


Fig. 19

2) For Stop/Non-stop control

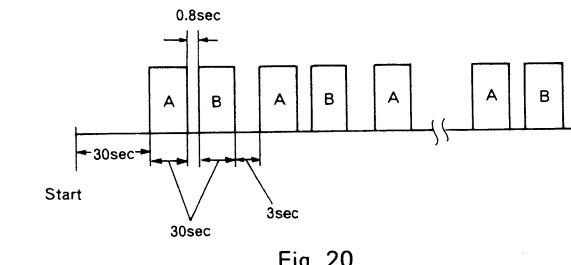
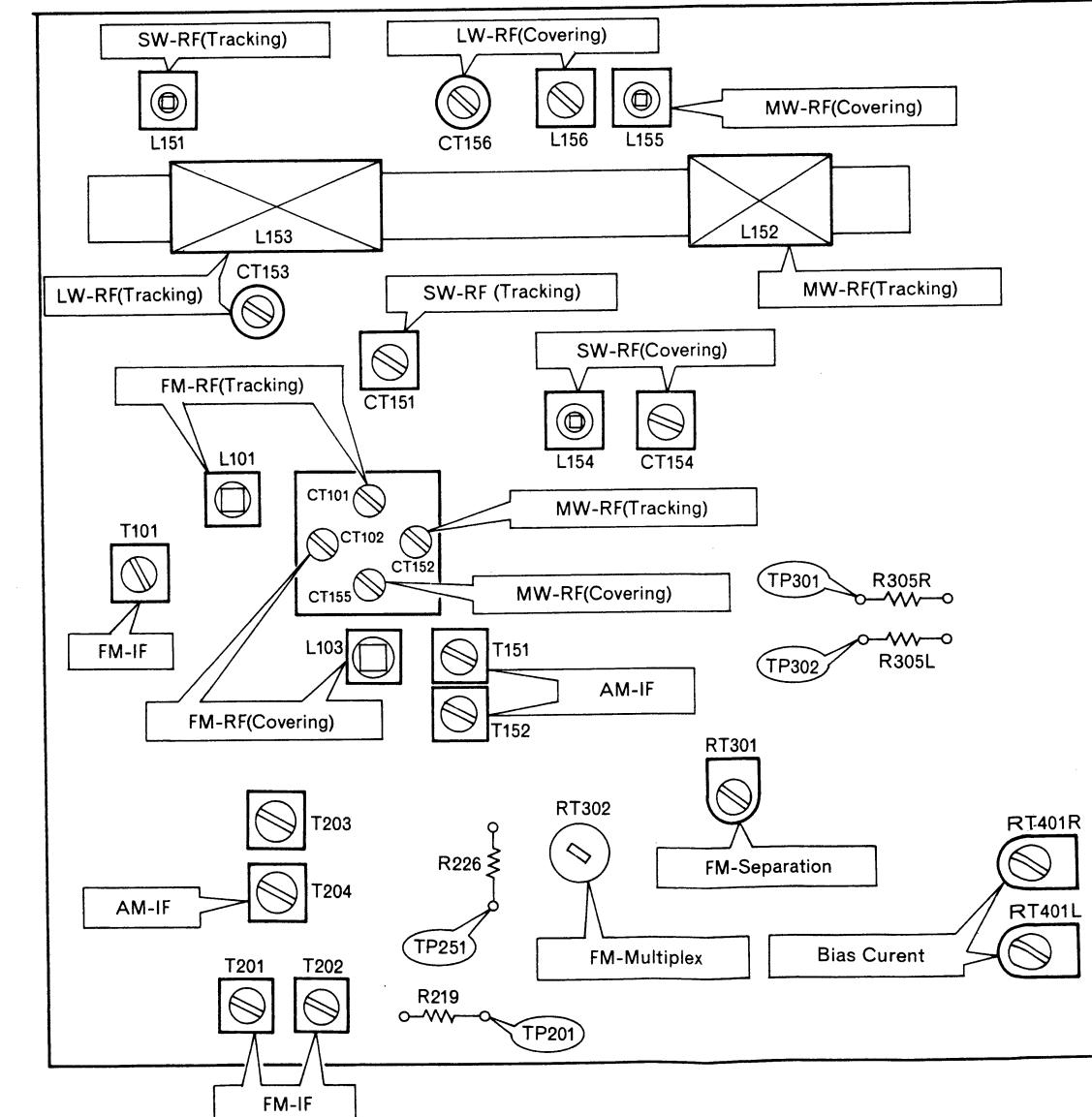


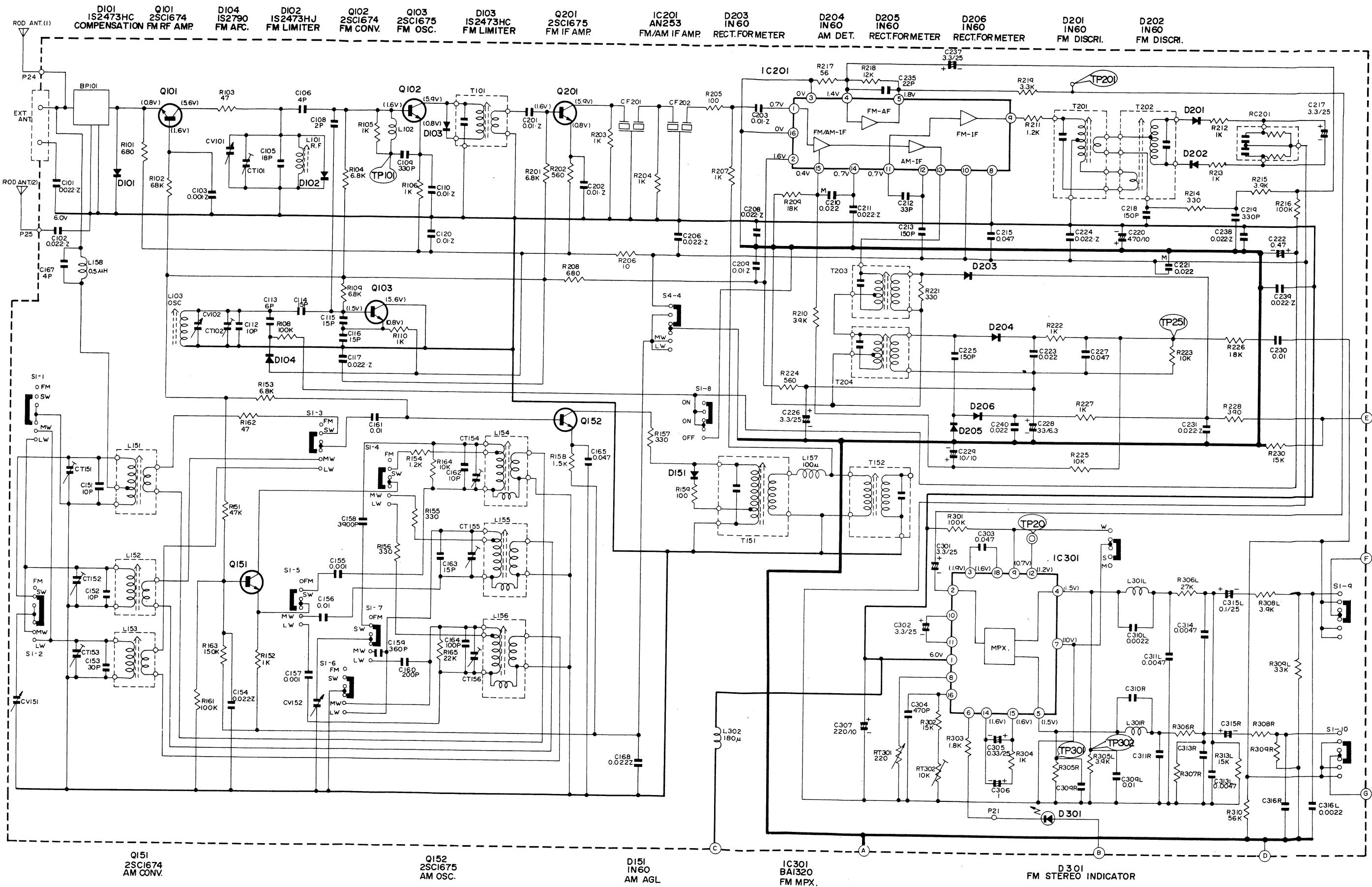
Fig. 20

Mode	Item	Pressure or Torque
Playback	Pressure of pressure roller	350g~500g
	Take-up torque	35g·cm~60g·cm
	Supply reel back tension	1.5g·cm~3.5g·cm
Rewind	Rewind torque	60g·cm~90g·cm
Fast Forward	Fast Forward torque	65g·cm~90g·cm

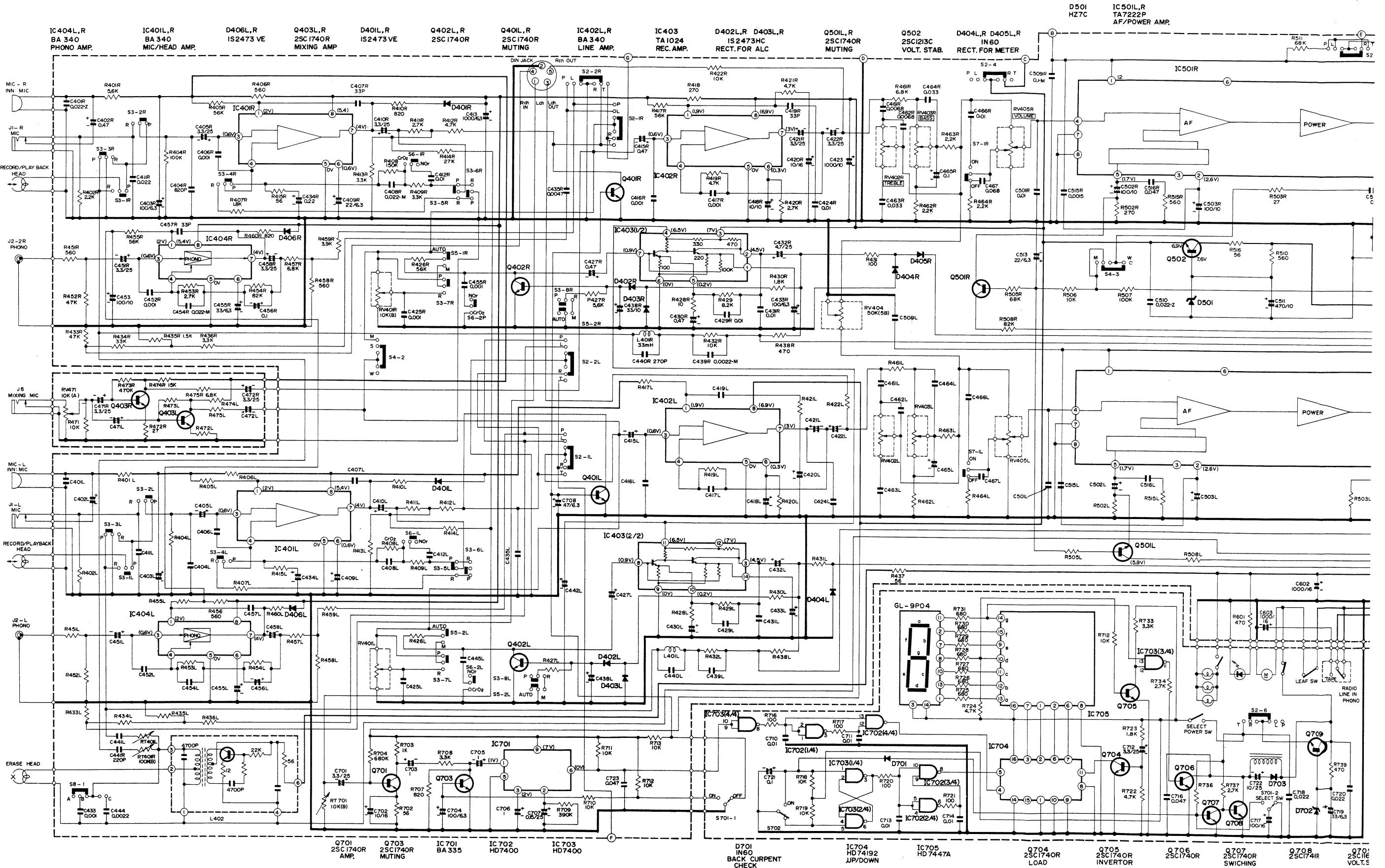
Adjustment Parts Location

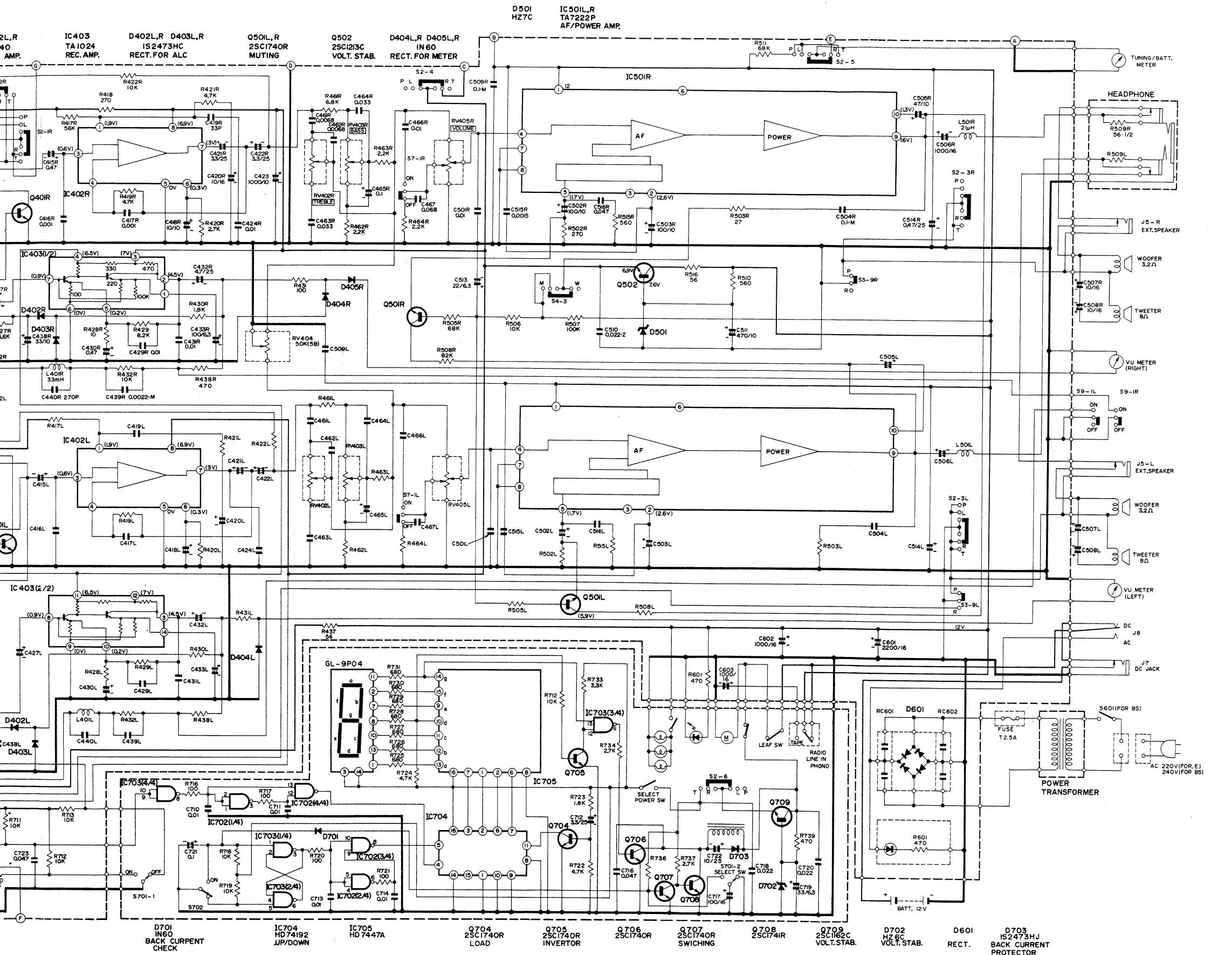


SCHEMATIC DIAGRAM (TUNER SECTION)



SCHEMATIC DIAGRAM (TAPE RECORDER/AF/POWER SECTION)





Note

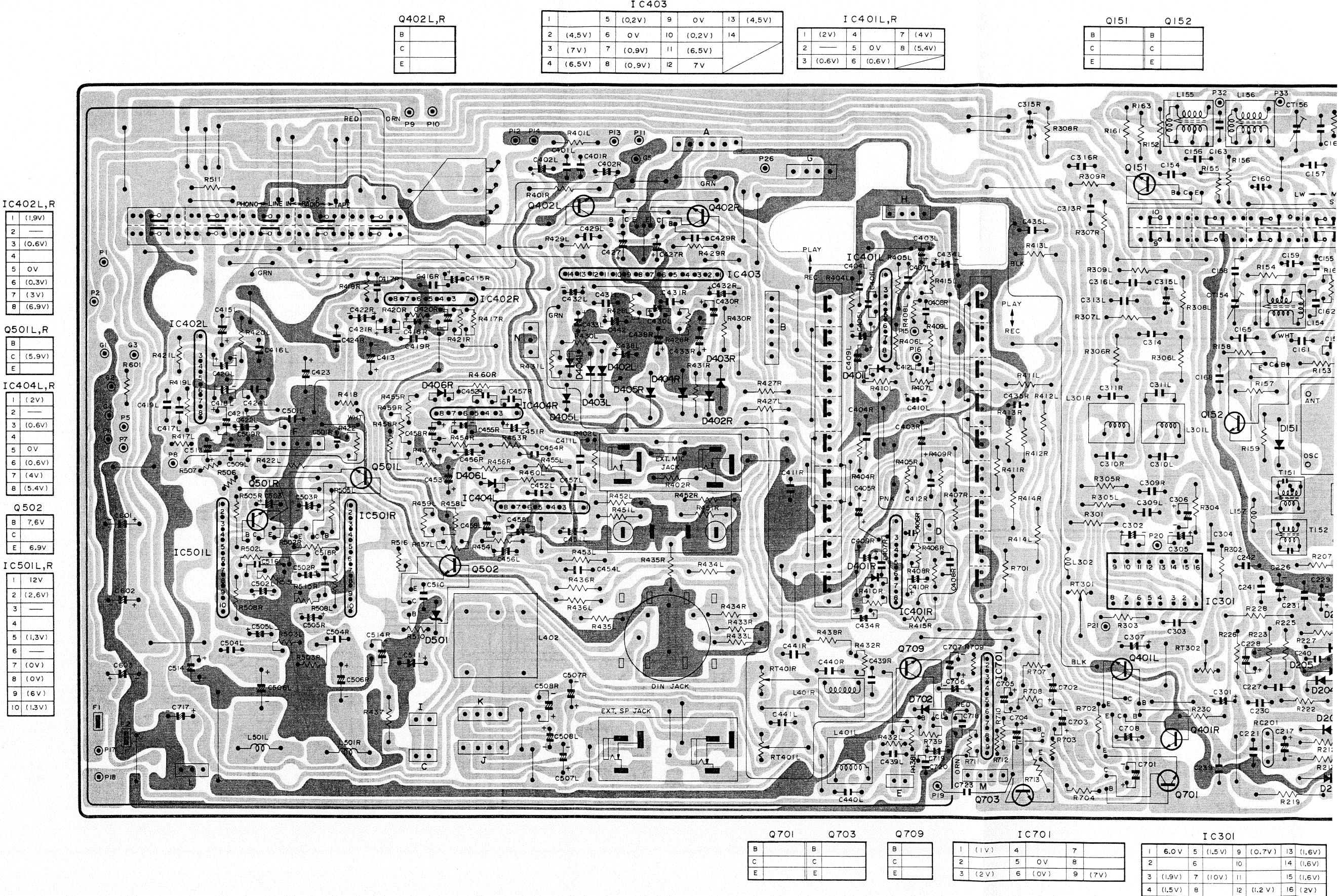
1. Voltage measured at base of chassis with minimum volume control and no signal.
2. Nomenclature of Resistors and Capacitors

2. Nomenclature of Resistors and Capacitors.		Circuit No.
R101 150 RS-1-K-	Value	No indicated Ω (Ohm) M : 1000 K Ω
	Tolerance	No indicated $\pm 5\%$ K : $\pm 10\%$ M : $\pm 20\%$
	Wattage	No indicated 1/4W
	Sort	No indicated Carbon film RC : Composition RW : Wire wound RS : Oxide metal film RN : Fixed metal film

		Circuit No.	
		Value	No indicated μ F P : PF
		Tolerance	No indicated $\pm 10\%$ J : $\pm 5\%$ M : $\pm 20\%$ Z : $+80\%$, -20% D : $\pm 0.5\mu$ F C : $\pm 0.25\mu$ F
C101 0.001·M		Sort	
			Ceramic
			Electrolytic
			Mylar
C102 0.1/16-+		Voltage	
			Polyester
C102 0.1/16-+			
			Styrol
		Voltage	No indicated 50WV

3. Be sure to make your orders of resistors and capacitors with value, voltage, tolerance and sort.
4. When replacing capacitors marked with *, use specified ones stated on parts list since required temperature characteristics.

CIRCUIT BOARD DIAGRAM (MAIN P.C. BOARD)

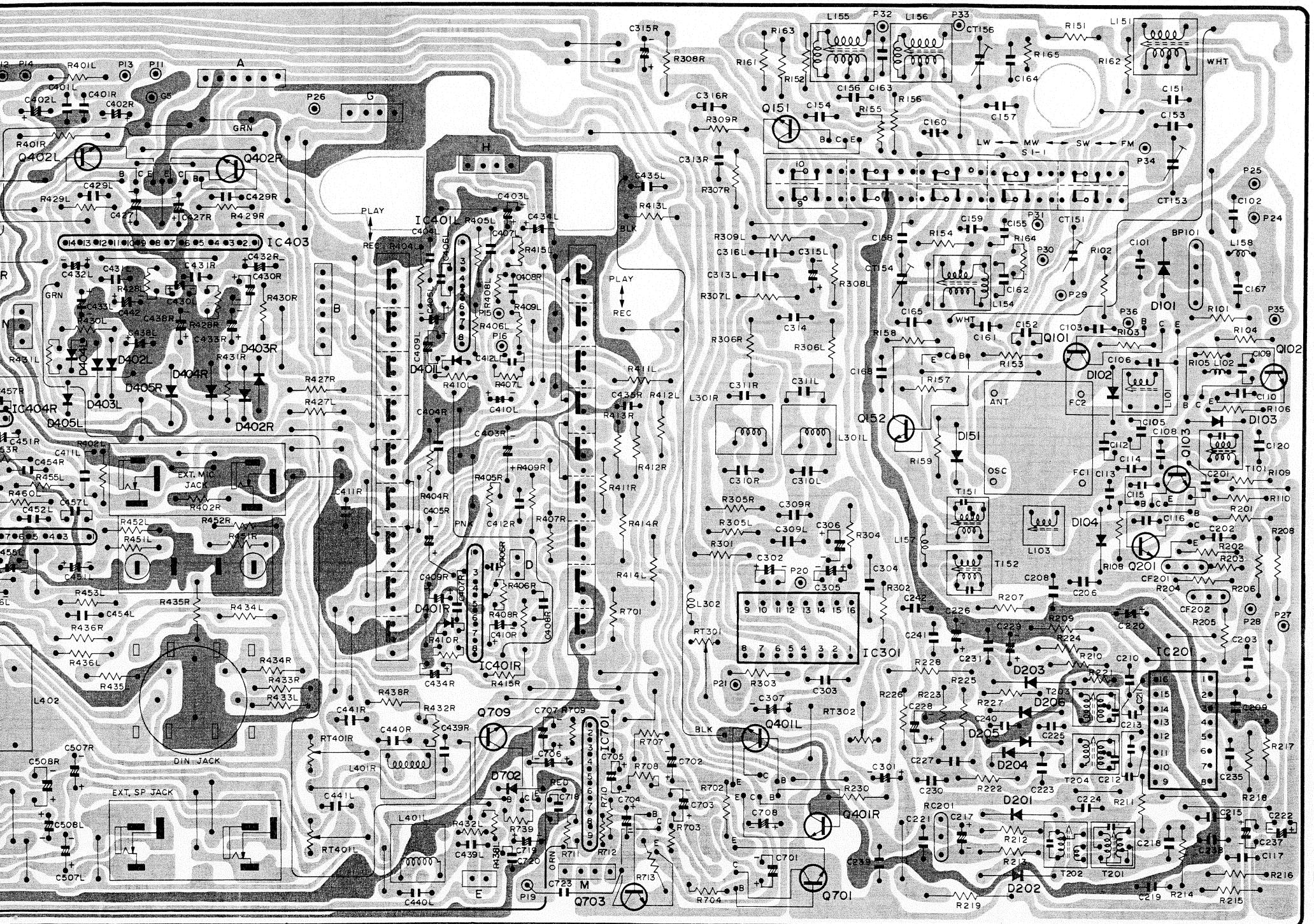


IC403

I	5	(0,2V)	9	0V	I3 (4,5V)
2	(4,5V)	6	0V	10 (0,2V)	14
3	(7V)	7	(0,9V)	11 (6,5V)	
4	(6,5V)	8	(0,9V)	12	7V

I	1 (2V)	4	7 (4V)
2	—	5	0V
3	(0,6V)	6	(0,6V)

B	B
C	C
E	E



Q101

B	(1,6V)
C	(5,6V)
E	(0,8V)

Q102

B	(1,6V)
C	(5,9V)
E	(0,8V)

Q103

B	(1,5V)
C	(5,6V)
E	(0,8V)

Q201

B	(1,6V)
C	(5,9V)
E	(0,8V)

IC201

1	0,7V
2	1,6V
3	0V
4	1,4V
5	1,8V
6	—
7	—
8	—
9	—
10	—
11	0,7V
12	—
13	—
14	0,7V
15	0,4V
16	0V

B	B
C	C
E	E

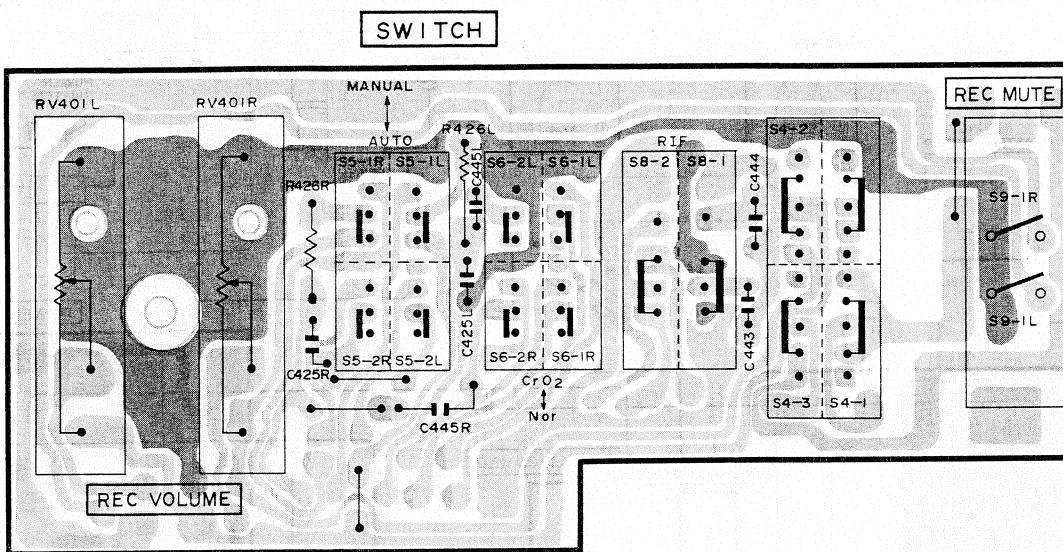
B	
C	
E	

I	(1V)	4	7
2	5	0V	8
3	(2V)	6	(0V)

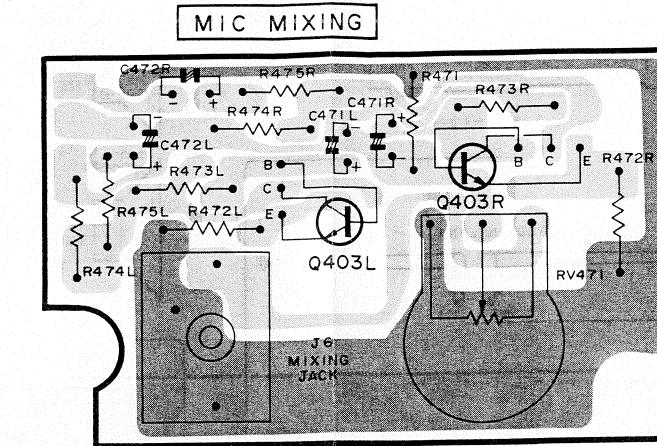
I	6,0V	5 (1,5V)	9 (0,7V)	I3 (1,6V)
2	6	10	14 (1,6V)	
3	(1,9V)	7 (1,0V)	11	15 (1,6V)
4	(1,5V)	8	12 (1,2V)	16 (2V)

B	
C	
E	

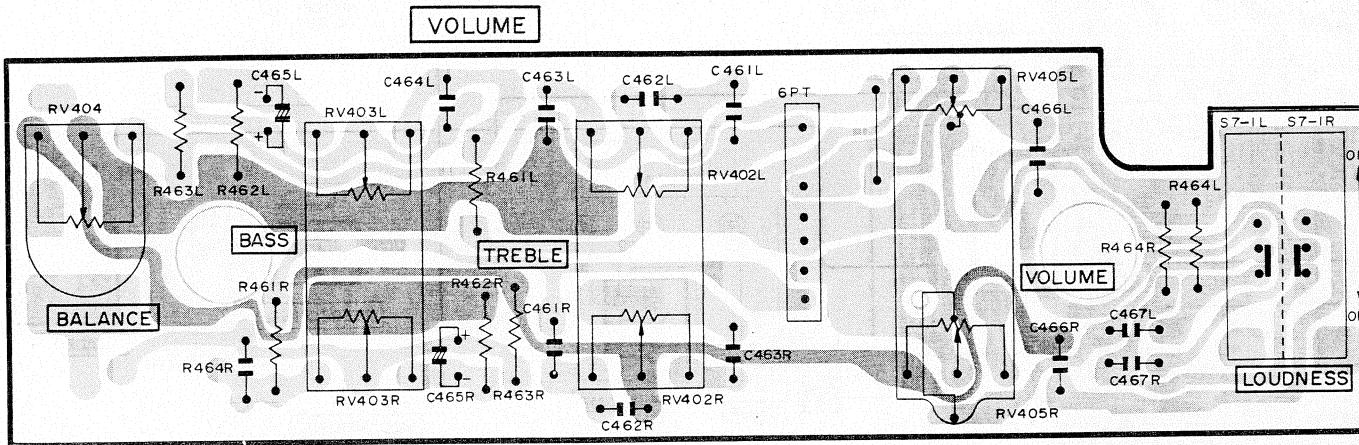
SWITCH PC BOARD



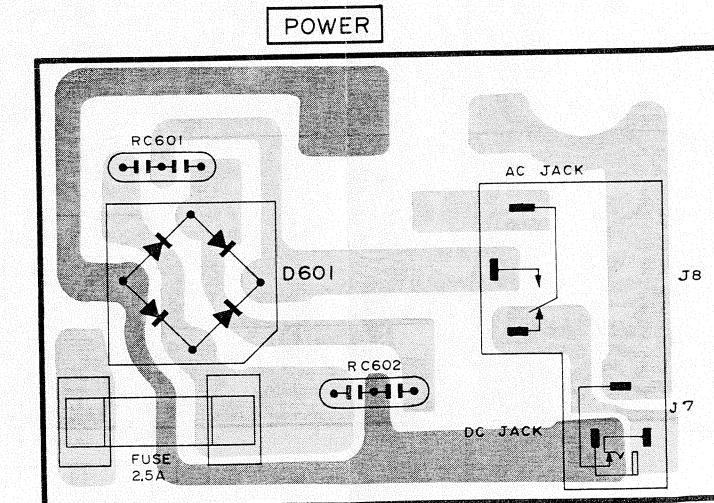
MIX PC BOARD



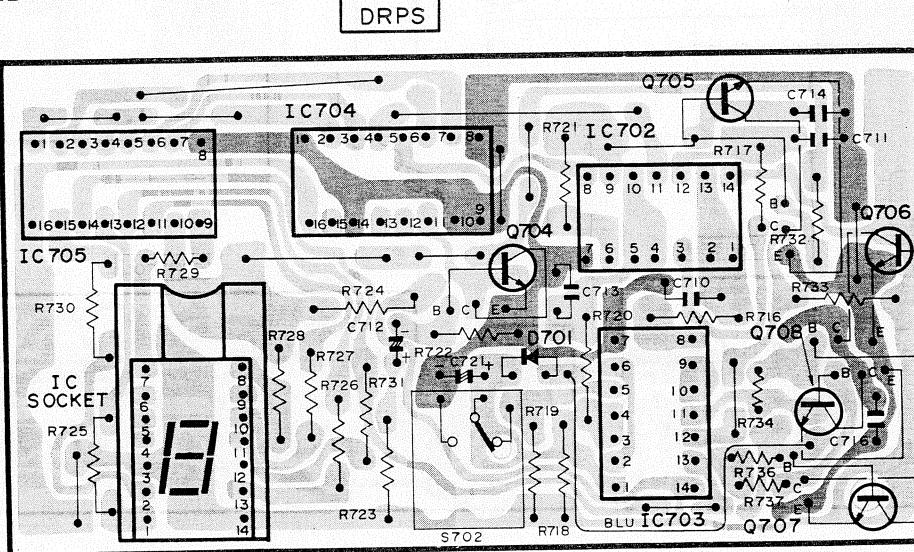
VOLUME PC BOARD



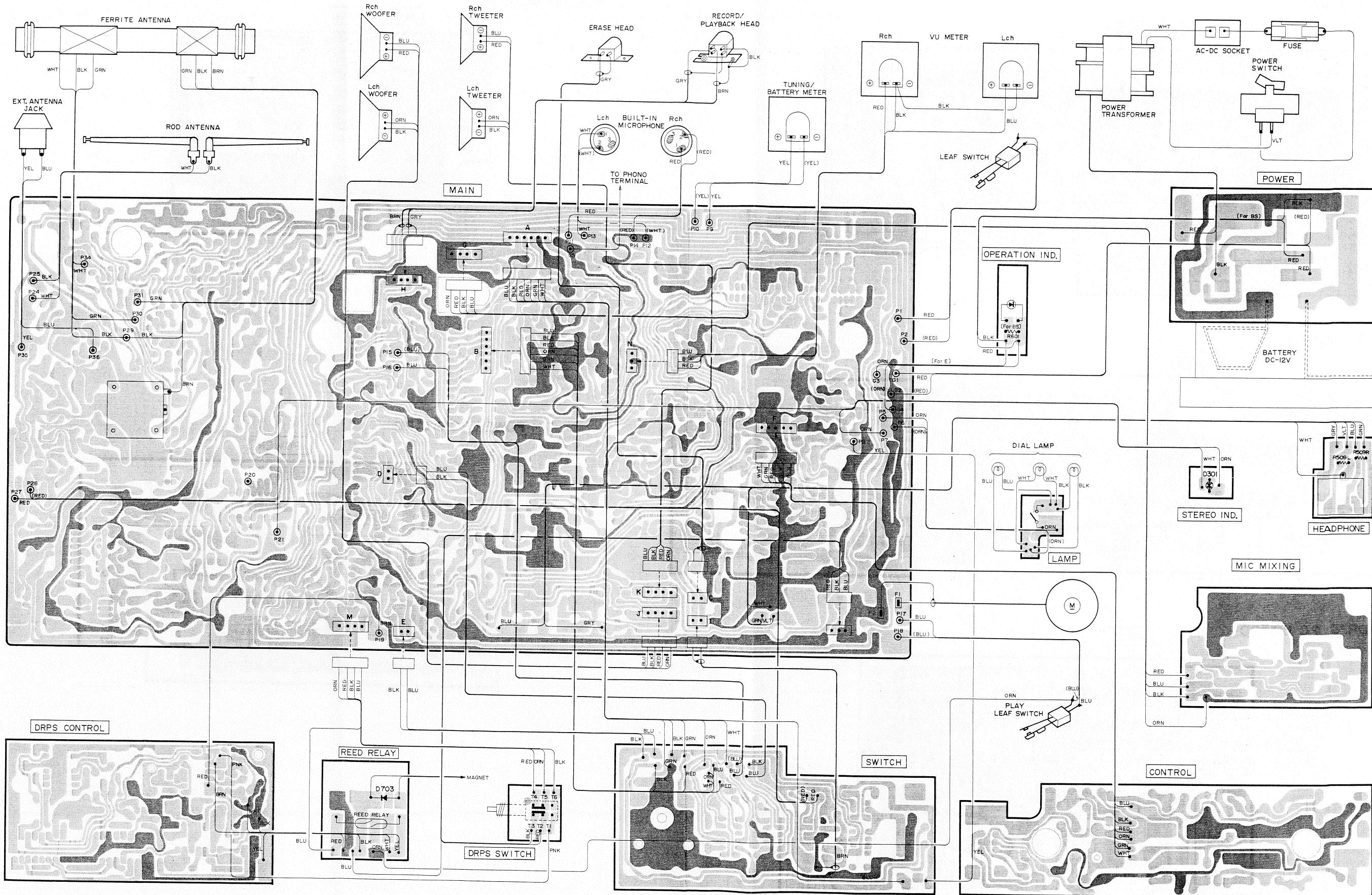
POWER PC BOARD



DRPS PC BOARD



WIRING DIAGRAM

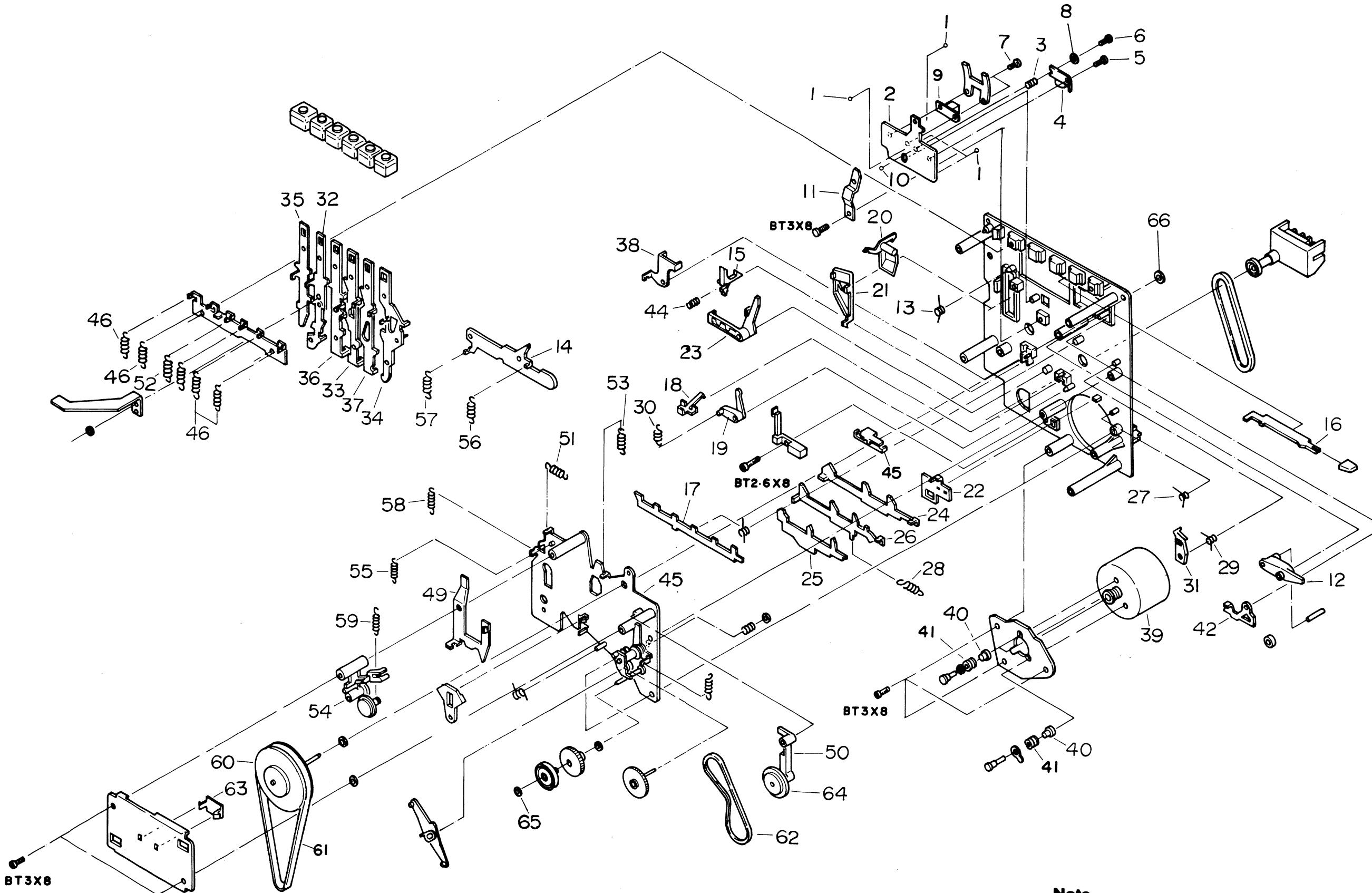


REPLACEMENT PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION	SYMBOL-NO	P-NO	DESCRIPTION
CAPACITORS					
CT101	5052191	PLASTIC FILM VARIABLE	D406LR	5330571	DIODE IS2473VE
CT102	5052191	PLASTIC FILM VARIABLE	D501	5330313	DIODE 1.0M SILICON HZC
CT151	5058191	TRIMMER 10PF	D701	0575005	DIODE 80M GERMANIUM 1N60
CT152	5052191	PLASTIC FILM VARIABLE	D702	5330393	ZENER DIODE SILICON HZC 1MHZ
CT153	5058102	VARIABLE	D703	5330574	DIODE IS2473
CT154	5058191	TRIMMER 10PF	IC201	5351064	IC AN253BB
CT155	5052191	PLASTIC FILM VARIABLE	IC301	5350682	IC BA 1320
CT156	5058102	VARIABLE	IC401LR	5350961	IC BA340
CV101	5052191	PLASTIC FILM VARIABLE	IC402LR	5350961	IC BA340
CV102	5052191	PLASTIC FILM VARIABLE	IC403	5357001	IC TA1024
CV151	5052191	PLASTIC FILM VARIABLE	IC404LR	5350961	IC BA340
CV152	5052191	PLASTIC FILM VARIABLE	IC501LR	5350811	IC TA7222P
C112	0248158	CERAMIC DISCAL 8PF+-0.5%	IC701	5352033	IC BA335
C114	0246474	CERAMIC DISC 15PF+-10%(NP-0)	IC702	5359431	IC HD7400P
C115	0246443	CERAMIC 13PF+-5% DC500WV	IC703	5359431	IC HD7400P
C116	0246474	CERAMIC DISC 15PF+-10%(NP-0)	IC704	5359791	IC HD74192
C304	0249537	CERAMIC DISC 470PF+-5%(NP-0)	IC705	5359801	IC HD7447A
RESISTORS					
RC201	0186357	CR PACK	LED001	5380101	RADIATION DIODE SLP-24B
RC601	0186451	CR PACK	LED002	5380271	LED GL-9PR2
RC602	0186451	CR PACK	Q101	5321271	TRANSISTOR SILICON 2SC1674L 600MHZ
RT301	0151806	SEMI VARIABLE 1KOHM B	Q102	5321281	TRANSISTOR SILICON 2SC1675-L 230MHZ 200M
RT302	5007186	SEMI VARIABLE 10KOHM	Q103	5321281	TRANSISTOR SILICON 2SC1675-L 230MHZ 200M
RT401LR	0151818	VARIABLE 100KOHM	Q151	5321271	TRANSISTOR SILICON 2SC1674L 600MHZ
RT701	0151808	SEMI VARIABLE 10K OHM R588	Q152	5321281	TRANSISTOR SILICON 2SC1675-L 230MHZ 200M
RV401LR	5027002	VARIABLE 10KOHM(B)	Q201	5321281	TRANSISTOR SILICON 2SC1675-L 230MHZ 200M
RV402	5000491	VARIABLE 100KOHM(B)	Q401LR	5321293	TRANSISTOR 2SC1740LN-R
RV403	5000492	VARIABLE 100KOHM(C)	Q402LR	5321293	TRANSISTOR 2SC1740LN-R
RV404	5000139	VARIABLE 50KOHM(B)	Q403LR	5321293	TRANSISTOR 2SC1740LN-R
RV405	5000493	VARIABLE 10KOHM(B)	Q501LR	5321293	TRANSISTOR 2SC1740LN-R
RV471	5000401	VARIABLE 10KOHM(A)	Q502	5320613	TRANSISTOR SILICON 2SC1213C 80M
SEMI-CONDUCTORS					
DB601	5331101	DIODE M4B-31	Q701	5321293	TRANSISTOR 2SC1740LN-R
D101	5330573	DIODE SILICON 1S2473 300MHZ 300MW	Q703	5321293	TRANSISTOR 2SC1740LN-R
D102	5330573	DIODE SILICON 1S2473 300MHZ 300MW	Q704	5321293	TRANSISTOR 2SC1740LN-R
D103	5330574	DIODE 1S2473	Q705	5321293	TRANSISTOR 2SC1740LN-R
D104	5330661	DIODE SILICON LS2790 200MHZ 80MW	Q706	5322213	TRANSISTOR 2SC1741R
D151	5330732	DIODE GERMANIUM 1N60P 80MHZ 50MW	Q707	5321293	TRANSISTOR 2SC1740LN-R
D201-206	5330732	DIODE GERMANIUM 1N60P 80MHZ 50MW	Q708	5322213	TRANSISTOR 2SC1741R
D401LR	5330571	DIODE IS2473VE	Q709	5320643	TRANSISTOR SILICON 2SC1162 150M
TRANSFORMERS					
D402L	5330574	DIODE 1S2473	T101	5140071	FM IFT
D402R	5330573	DIODE SILICON 1S2473 300MHZ 300MW	T151	5130153	AM IF
D403LR	5330574	DIODE 1S2473	T152	5130121	AM IFT
D404LR	0575005	DIODE GERMANIUM 1N60 80M	T201	5148111	FM DISCRIMINATOR

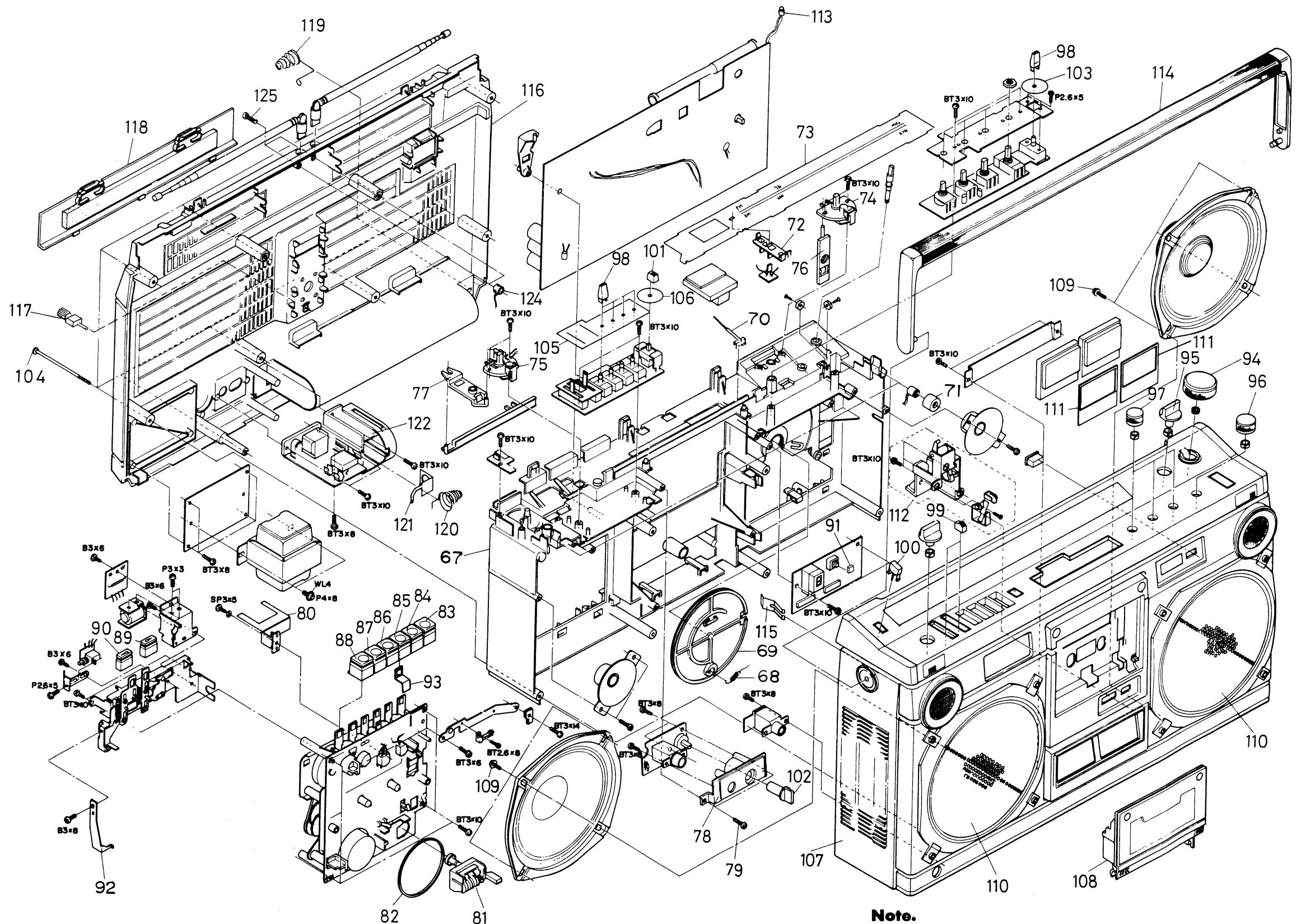
SYMBOL-NO	P-NO	DESCRIPTION	SYMBOL-NO	P-NO	DESCRIPTION			
TRANSFORMERS								
T202	5148112	FM DISCRIMINATOR	PL1	5762283	LAMP(12V)			
T203	5140072	FM IFT	PL2	5762281	LAMP			
T204	5130122	AM IFT	PL3	5762286	LAMP(12V)			
T601	5212682	POWER	S 1	5625011	SLIDE SWITCH			
T601	5212683	POWER (BS)	S 2	5624151	SLIDE SWITCH			
COILS								
L101	5126482	FM RF	S 3LR	5623431	SLIDE SWITCH			
L102	5150791	CHOKE	S 4	5604281	LEVER SEITCH			
L103	5126313	FM OSCILLATOR	S 5LR	5604103	LEVER SWITCH			
L106	0333121	TRAP	S 6LR	5604103	LEVER SWITCH			
L151	5123493	SWITCH ANTENNA	S 7LR	5604082	LEVER SWITCH			
L152	5113271	FERRITE ANTENNA	S 8	5604092	LEVER SWITCH			
L153	5113271	FERRITE ANTENNA	S 9LR	5633491	PUSH SWITCH			
L154	5123494	SW DSC	SP	5401121	SPEAKER-5CM			
L155	5120319	OSCILLATOR	SP	5407331	SPEAKER-16CM			
L156	5120465	LW DSC	S601	5602021	SEESAW SWITCH (BS)			
L157	5152091	CHOKE 180MICRO H	S701	5633315	PUSH SWITCH			
L158	5150791	CHOKE	S702	5633531	PUSH SWITCH			
L301LR	5150571	CHOKE 33MH	S703	5641311	LEAD SWITCH			
L302	5152091	CHOKE 180MICRO H	S704	5603231	LEAF SWITCH			
L401LR	5120306	TRAP	S705	5603112	LEAF SWITCH			
L402	5260661	OSCILLATOR BLOCK	FOR ACCESSARIES					
L501LR	5150761	CHOKE	△	5747321	POWER CORD			
MISCELLANEOUS						△	5746341	CORD ASSEMBLY (BS)
5310351	DISPLAY GL9P04	1	0948492	BALL - 2MMD				
5643043	MAGNET	2	7105837	HEAD PLATE				
5653211	DIN JACK	3	6321734	SPRING				
5653241	AC-DC SOCKET	4	5444761	RECROD PLAYBACK HEAD				
5653321	IC SOCKET	5	7780912	TAPPING SCREW-2MMX8MM				
5659121	BACK COVER	6	7781004	SCREW				
5671661	FM ANTENNA TERMINAL	7	7780912	TAPPING SCREW-2MMX8MM				
5674132	HEADPHONE JACK	8	7778183	POLYESTER WASHER				
ANT	5752371	ROD ANTENNA	9	5445131	ERASE HEAD			
BP101	5161551	FILTER	10	0948492	BALL - 2MMD			
CF201	5160211	CERAMIC FILTER CF107A	11	6329637	HEAD PLATE HOLDER			
CF202	5160211	CERAMIC FILTER CF107A	12	6383142	PRESSURE ROLLER ARM ASSEMBLY			
F001	5721064	FUSE 2.5A	13	6307741	SPRING			
F601	5720173	FUSE 500MA (BS)	14	7286182	PR LEVER			
J1LR	5679442	JACK PLATE (MIC,MONITOR)	15	6741103	RECORDING PREVENTION ARM			
J2LR	5676163	2P PIN JACK	16	7286253	PR PLATE			
J5LR	5679442	JACK PLATE (MIC,MONITOR)	17	7286145	LOCK PLATE			
J6	5674161	JACK-6.4MMD	18	6530471	CASSETTE HOL DER			
LM	5554433	LEVEL METER	19	6740971	BRAKE FUNCTION ARM			
LM	5554721	LEVEL METER	20	6740982	EJECT ARM			
MIC	5421211	MICROPHONE	21	6741186	EJECT SLIDER			

EXPLODED VIEW

**Note.**

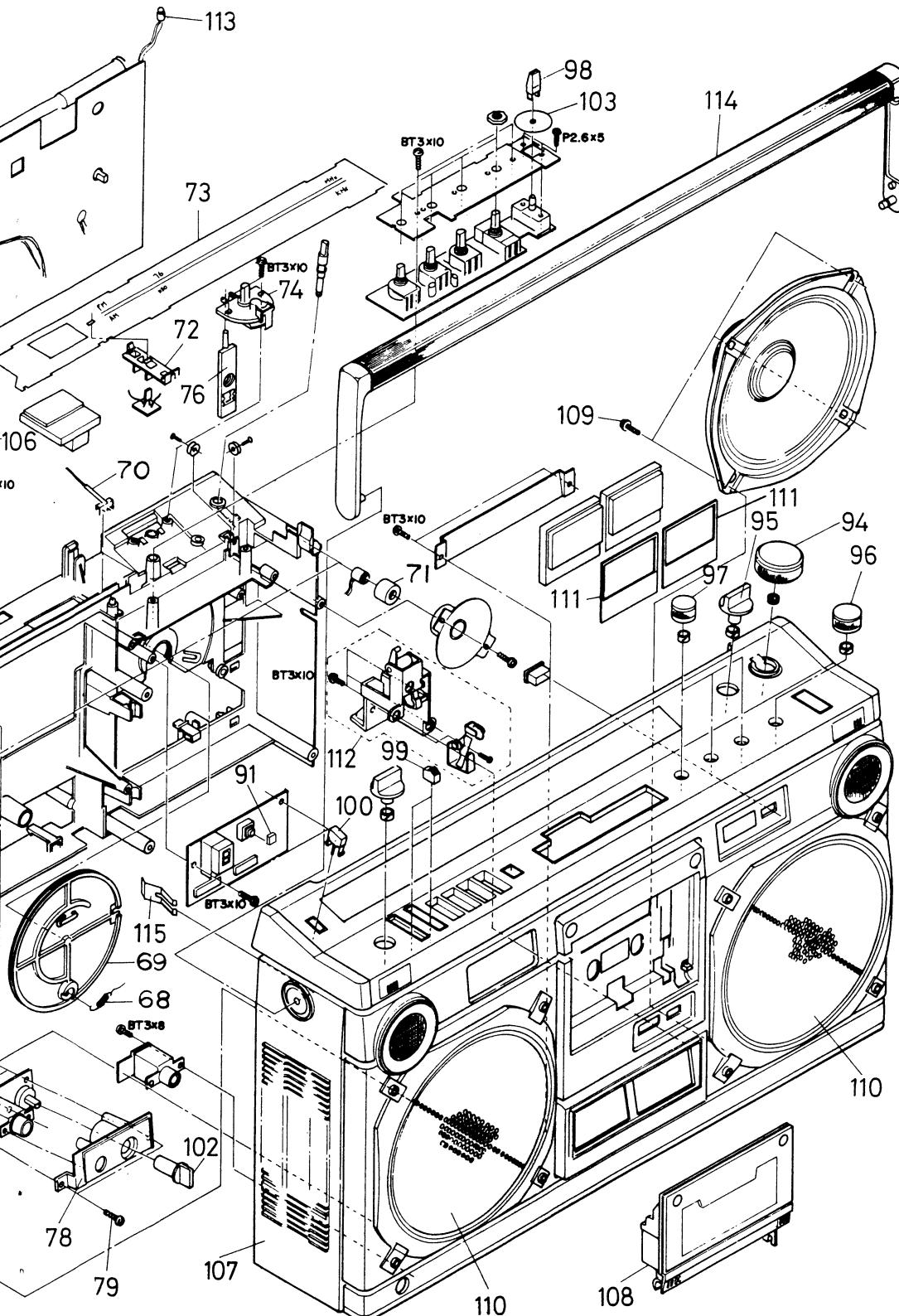
Components marked without numbers in this drawing are not specified as replacement parts.

EXPLODED VIEW



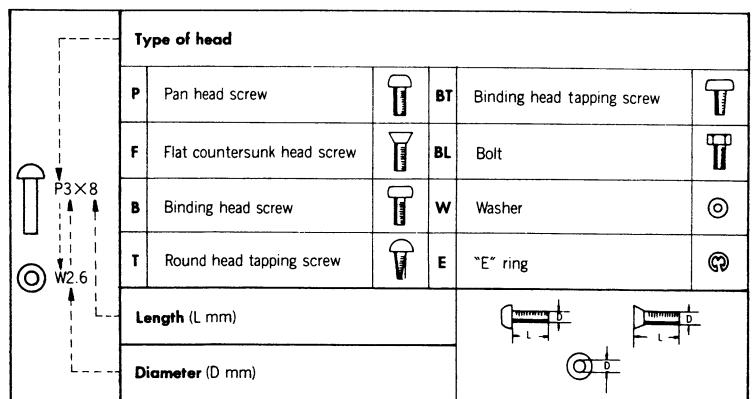
Note.

Components marked without numbers in this drawing are not specified as replacement parts.

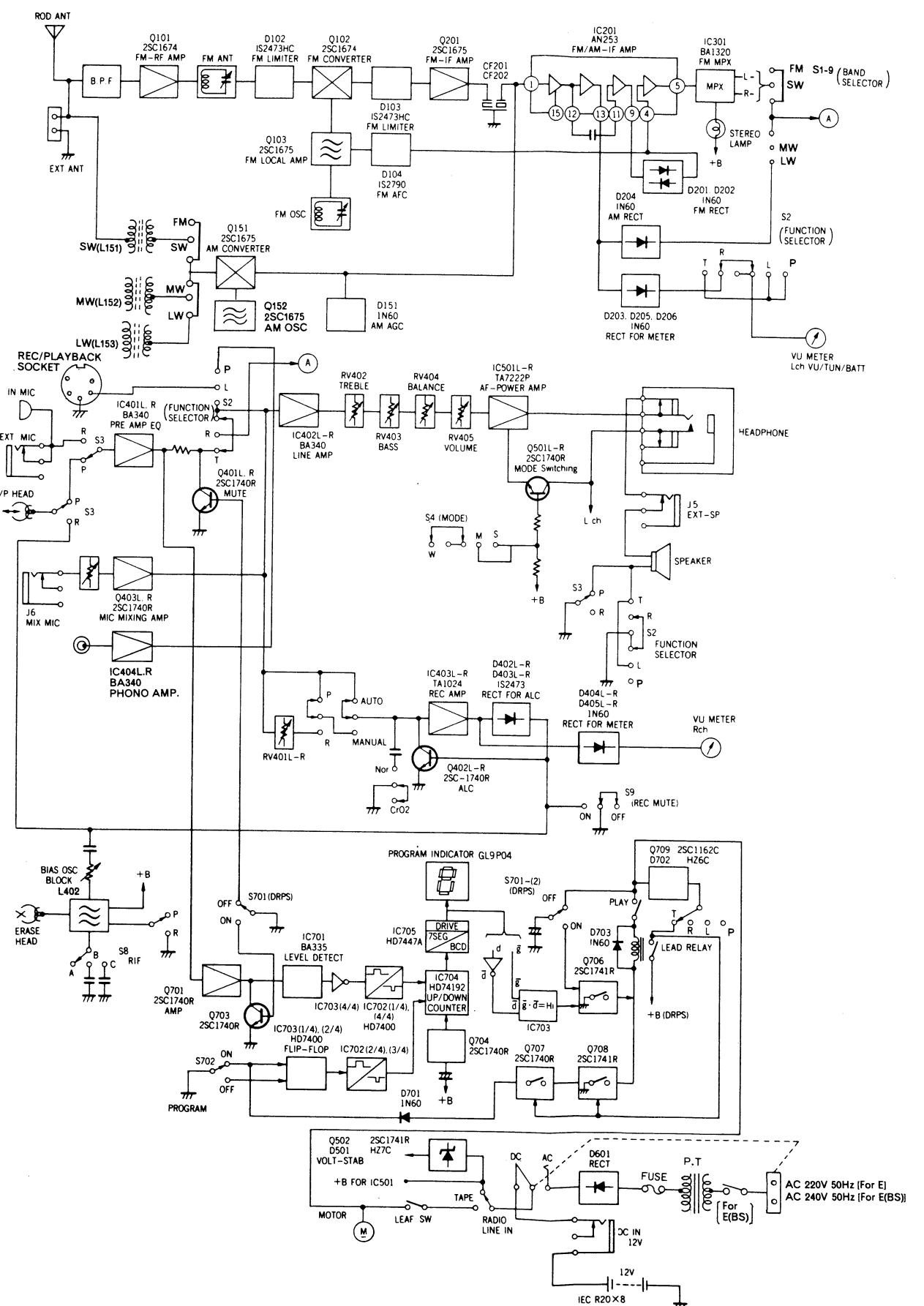


BLOCK DIAGRAM

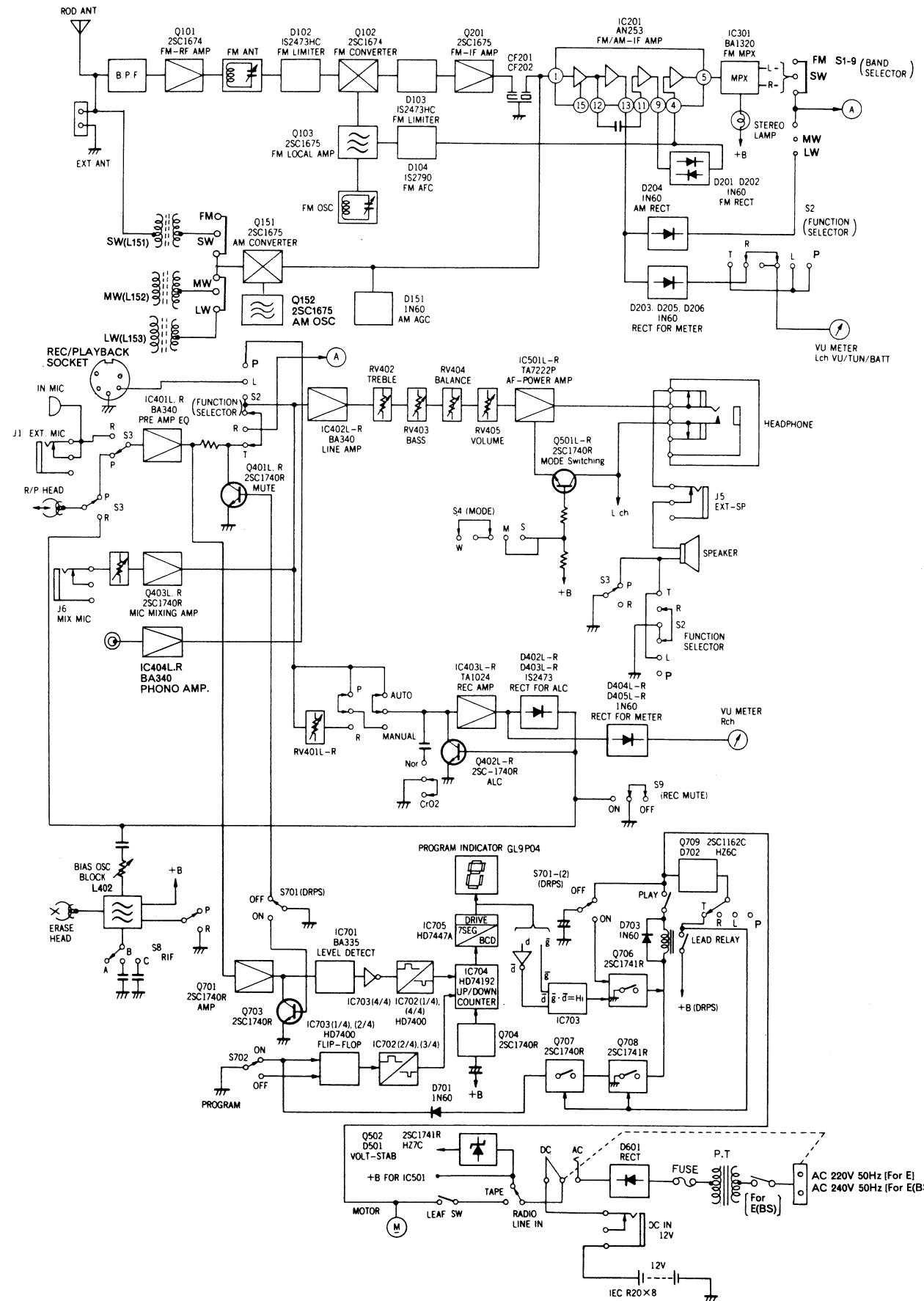
SYMBOL-NO	P-NO	DESCRIPTION	SYMBOL-NO	P-NO	DESCRIPTION
MISCELLANEOUS					
110	6660591	SPEAKER COVER	119	6305141	BATTERY SPRING
111	6589201	RUBBER FOR METER	120	6308961	SPRING
112	6757201	EJECT ASSEMBLY	121	7451121	BATTERY TERMINAL
113	6301951	SPRING	122	6753451	TERMINAL HOLDER
114	6333645	HANDLE ASSEMBLY	123	6746881	FUSE COVER
115	6531142	SPRING	124	5687142	CAP TERMINAL
116	6032223	REAR CASE ASSEMBLY	125	8744414	BIND SCREW-3MMX14MM
116	6032224	REAR CASE ASSEMBLY (BS)	126	7780185	PAN HEAD B TIGHTENING SCREW-2.6MMX6MM (BS)
117	7450911	TERMINAL PIECE	127	6746902	SWITCH COVER (BS)
118	6173452	BATTERY LID ASSEMBLY	128	7781133	BT SCREW-3MMD
			129	6530741	SPRING (L)



When ordering hardware excluding stated on these lists, be sure to make your orders with type and size.



BLOCK DIAGRAM



HITACHI

HITACHI SALES EUROPA GmbH
2 Hamburg 54, Kleine Bahnstraße 8, West Germany
Tel. 850 60 71-75

HITACHI SALES (U.K.) Ltd.
Hitachi House, Station Road, Hayes, Middlesex UB3 4DR, England
Tel. 01-848-8787 (Service Centre : 01-848-3551)
HITACHI SALES SCANDINAVIA AB
Rissneleden 8, Sundbyberg, Box 7138, S-172-07 Sundbyberg 7,
Sweden
Tel. 08-98 52 80

HITACHI SALES NORWAY A/S
Cerebekk 1620 Gressvik P.O. Box 46 N-1601 Fredrikstad, Norway
Tel. 032-28050

SUOMEN HITACHI OY
Box 151, SF-15100 Lahti 10, Finland
Tel. Lahti 44 241

HITACHI SALES A/S
Kuldysen 13, DK-2630 Taastrup, Denmark
Tel. 02-999200

HITACHI SALES A.G.
5600 Lenzburg, Switzerland
Tel. 064-513621

HITACHI-FRANCE (Radio-Télévision Electro-Ménager) S.A.
9, Boulevard Ney 75018, Paris, France
Tel. 201-25-00

HITACHI SALES WARENHANDELS GMBH
A-1180/Wien, Kreuzgasse 27
Tel. (0043222) 439367/8